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SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. It is advised to insert an isolation transformer in the AC supply before servicing a hot chassis.

2. Potentials as high as 33KV are present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by any one who is not competent with the precautions necessary when working on the high voltage equipment. Always discharge the anode of the tube.

3. When servicing observe the original lead dress in the high voltage circuits. If a short circuit is found , replace all the parts which have been overheated or damaged by the short circuit.

4. always use the manufacturer's replacement safety components. The critical safety components marked with ∇ on the schematics diagrams should not be by other substitutes. Other substitute may create the electrical shock , fire or other hazards. Take attention to replace the spacers with the originals. Furthermore where a short circuit has occurred , replace those components that indicate evidence of overheating.

5. After servicing , see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.

6. When the receiver is not being used for a long time of period of time , unplug the power cord from the AC outlet.

7. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazard.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs of the plug.

2. Turn the receiver's power switch.

3. Measure the resistance value with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screw heads, aerials, connectors , control shafts etc. When the exposed metallic part a return path to the chassis the reading should be between 4Mohm and the 20Mohm. When the exposed metal does not have a return path to the chassis, the reading must be infinite.

4.

LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly in to the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 2Kohm 10W resistor in series with an exposed metallic part on the receiver and an earth, such as a water pipe.
3. Use an AC voltmeter with high impedance to measure the potential across the resistor.
4. Check each exposed metallic part and check the voltage at the each point.
5. Reverse the AC plug at the outlet and repeat each of the above measurements.
6. The potential at the any point should not exceed 1.4 Vrms. In case a measurement is outside the limits specified , there is the possibility of a shock hazard , and the receiver should be repaired and rechecked before it is returned to the customer.

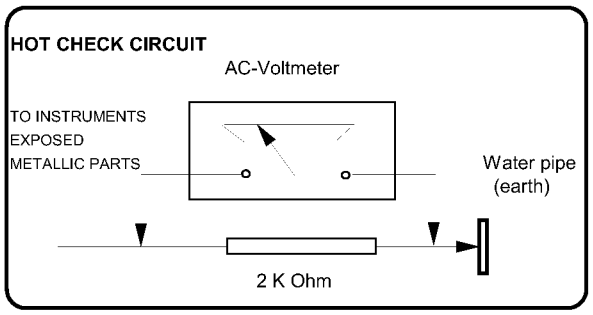


Figure 1

X-RAY RADIATION WARNING

The primary source of X-ray radiation in this receiver is the picture tube. The chassis is specially constructed to limit X-ray radiation. For continued X-ray radiation protection, replace the tube with the same type of the original one.

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR THE CARBON PAINTED ON THE CRT, AFTER REMOVAL OF THE ANODE CAP.

TECHNICAL SPECIFICATIONS AND THE FEATURES

Power source:	230-240V AC ,50-60Hz	
Power consumption:	175 W	28" 4:3 / 28" 16:9 SF
	180 W	28" 16:9 PF
	180 W	29" 4:3 SF
	185 W	29" 4:3 PF
	185 W	32" 16:9 SF
	190 W	32" 16:9 PF
	200 W	33" 4:3
Stand by Power consumption :	5 W (For all sizes)	
Audio Outputs :	2 x 12 W RMS at %10 THD (For all sizes)	
Aerial impedance :	75Ohm, Coaxial type	
Receiving system *:	PAL BG PAL SECAM BG PAL SECAM BG DK/DK' PAL SECAM BG LL' PAL I	
Receiving channels:	VHF BAND I , CH2-4 VHF BAND III , CH5-12 CATV CHANNLES S1-S41 UHF BAND CH21-69	
Sound systems :	Mono/Stereo/NICAM (optional)	
Grid 2 voltage :	0-1400V	
Heater voltage :	6.3±0.2Vrms	

Operating temperature : 0-45 Degrees

Safety : IEC 65 /BS P2N

X-Ray radiation : ACC. IEC 65/BS P2N

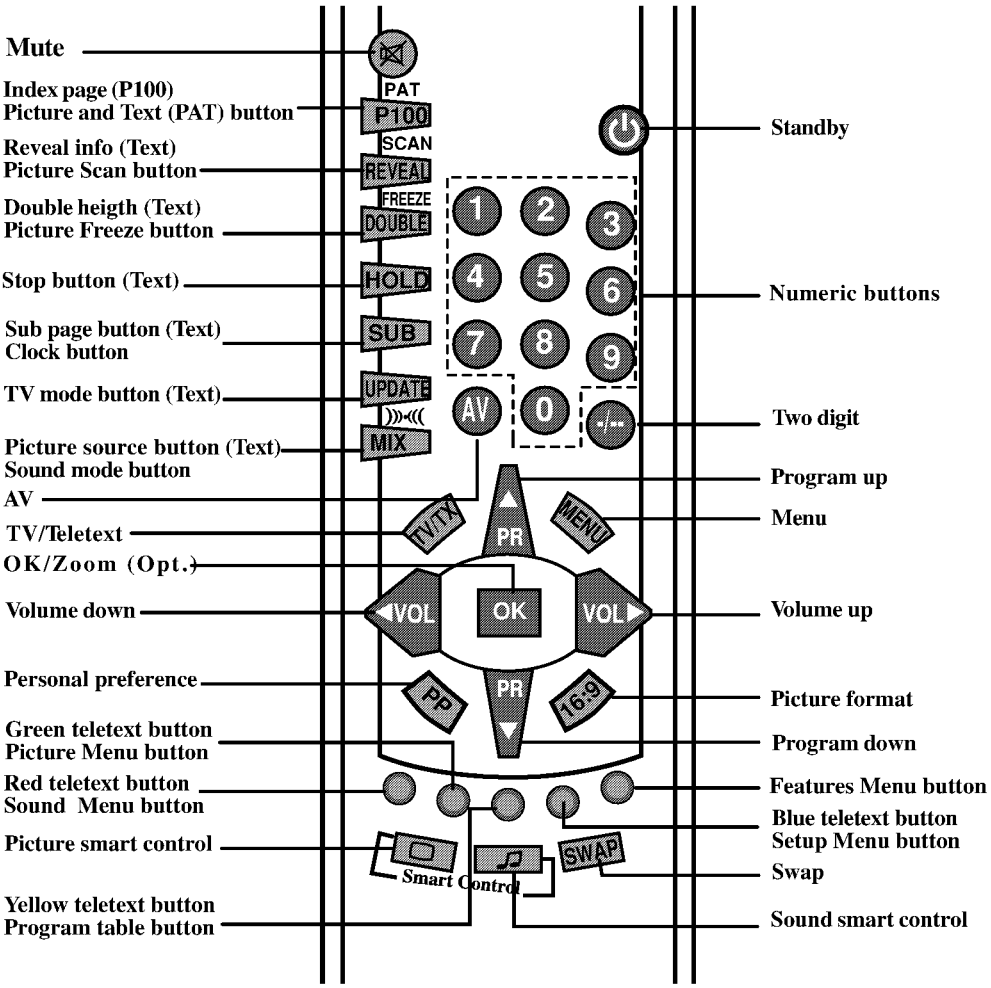
- : TV set is produced to receive "one" of this colour and sound systems options which is based one your countries norms and can not be changed by user except BG/DK and BG/LL'if both systems are available to receive (BG or DK and BG or LL').

NOTE : Using a subwoofer causes 20 W extra power consumption and supplies maximum 20 W extra sound output.

Special features

• 100 Hz digital scan.
• 9 page teletext.
• Fastext and/or Toptext (Optional).
• Letterbox, Subtitle 1 & 2, 16:9, 14:9 picture formats (for Widescreen TV sets) (Optional).
• Digital Colour Transition Improvement (DCTI).
• Digital Comb Filter (DCF) (Optional).
• Digital Luminance Transition Improvement (DLTI).
• Manual degaussing (Optional).
• Scan Velocity Modulation (SVM.) (Optional).
• Dynamic Focus (Optional).
• 3 step Zoom function (Optional).
• Picture freeze function
• Automatically switch to stand by in five mihutes after a channel ceases to transmit or selecting a channel which has no transmission (Auto off function).
• Virtual Dolby surround (Optional).
• Subwoofer (optional).
• Dynamic Bass Enhancement (Optional).
• Back audio out.
• 5 band graphic equaliser.
• Automatic Volume Limiting (AVL).
• Programme Editing Table.
• Naming the channels.
• Your TV can receive stereo channels directly (NICAM optional).
• Automatic tuning system with country selection (ATS).
• 100 Programme Memory.
• Cable/Hyperband tuner.
• Manual Fine Tuning.
• Child Lock.
• Return to the last channel viewed (SWAP).
• Normalisation system to recall the setting in memory after the volume, colour,contrast, brightness settings have been changed (PP).
• Picture adjustment using one button (Picture Smart Control).
• Sound adjustment using one button (Sound Smart Control).
• Advanced On Screen Display.
• Infrared Remote Control.
• Programmable on/off timer.
• Multi language menu system (10).
• Stereo headphone socket.
• 2 Scart Sockets: Video cassette recorder, satellite receiver, video disc player,DVD, TV games or a home computer can be connected to this AV socket with an appropriate connecting cable (3rd Scart socket is optional).
• S-Video connection.
• Audio/Video RCA sockets.

Remote control

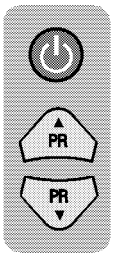


Using the TV

Turning on for the first time and Tuning

TV controls

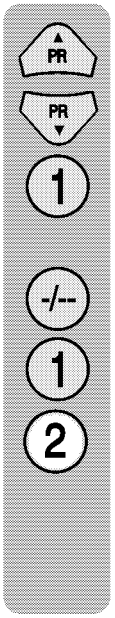
Stand-By mode



When your TV is working on, press the red "STAND-BY" button on the right upper corner of your remote control to switch off and the Stand-By indicator (Led) will be brighter. To turn on your TV again, press one off the numaric buttons, **Program up** or **Program down**.

Please Note: If you will not use your TV for a long time, do not leave it on Stand-By mode, instead switch it off from the power button on the front panel of the TV set. If you always leave your TV on Stand-By mode, demognetization process will notoccur and that will couse coloring problems. If you occurs, press the power button to switch off your TV and weit until it cools off.

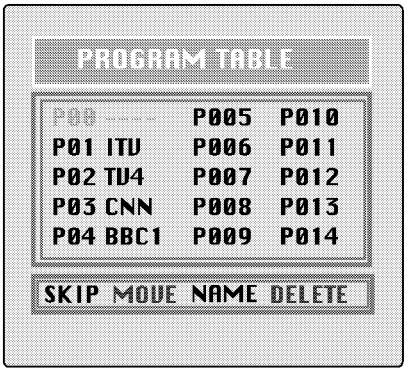
Programme selection

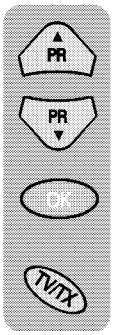


Press the **Program up** or **Program down** buttons on the TV or remote control or press a **Numeric** button to select a programme.

To select a programme whose number is greater than 9 using the numeric buttons, press the **-/--** button first and then press the two **Numeric** buttons. For example, to select programme 12, press the **-/--** button followed by **1** and then **2.**

You can also select a program by pressing in the Yellow button to see the Program Table.

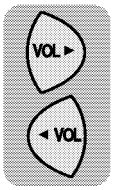




Use the **Program up** and **Program down** buttons to scroll through the programme numbers. When you find the program number you want press the **OK** button again.

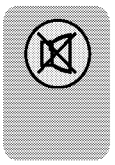
Press the **TV/TX** button to close the Program Table.

Volume

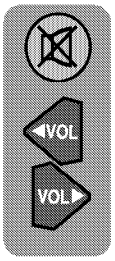


Press the **Volume +** or **Volume -** button on the TV or the **Vol ◀** or **Vol ▶** button on the remote control. A sound level bar will appear on the screen.

Mute



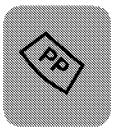
To mute the sound press the **Mute** button on the remote control. A loudspeaker symbol will appear on the screen.



Press the **Mute** button again to restore the sound. The symbol will disappear.

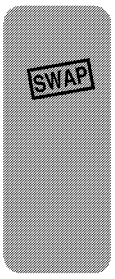
Pressing **Volume up** buttons will also restore the sound. But pressing the **Volume down** button will increase the volume without restoring.

PP



Personal preference. Press the **PP** button to revert to the default settings for the TV. (See TV setup).

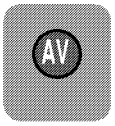
Swap



Select the programme you would like to recall by pressing **SWAP** button. Selected programme number will appear on the upper left side of the screen. While watching any programme, you can recall the selected one by pressing **SWAP** button again. If you press swap button again you can recall the last programme you watched. You can cancel SWAP function by pressing **MENU** button.

PR 01 ➡ (SWAP) PR 11 ➡ PR 12 ➡ PR 13...➡ (SWAP) PR 01

AV



Your TV has 2 (3. scart opt.) scarts so every time you press your AV button, your input will change as follows:

1 AV1 when using SCART socket 1 (RGB support) (Option).
2 AV2 when using SCART socket 2.
3 AV3 when using SCART socket 3 (RGB support) (Optional).
4 AV3-S for S-Video equipment to scart 3 (S-VHS/Scart adapter is needed).
5 AV4 when using the RCA sockets of the TV.
6 AV4-S when using the S-video socket.

Press the **AV** button again to return to TV.

Tuning the television

There are two ways of tuning your television: Manual, where you control the tuning process or
Autoprogram where the television does it all automatically.

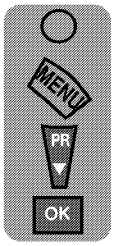
Your TV will sort all the channels with the ATS. Sorting will be performed in the following order:

a- Selected country's channels with teletext and channel names.
b- Selected country's channels with teletext and without channel names.
c- Selected country's channels without teletext.
d- Foreign channels with teletext and channel names.

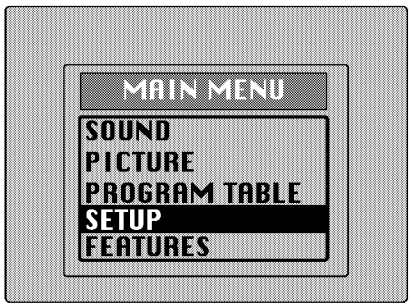
Please Note
If the TV is set to a channel with no signal the TV will return to standby in 5 minutes.
The last minute remaining is displayed on the screen.

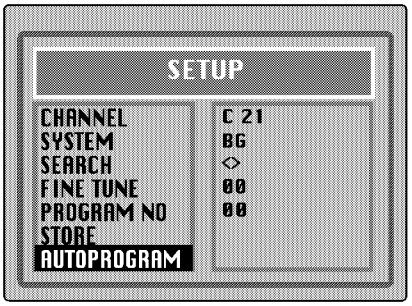
Automatic tuning (Autoprogram)

There are two ways to access the SETUP menu:



Press the blue **Setup** button.
or
Press the **Menu** button and use the **Program down** button to select SETUP. Press the **OK** button to enter the SETUP menu.



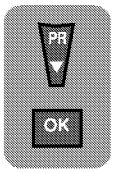


Please note

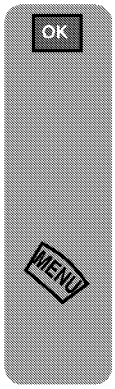
The system will displayed automatically on SYSTEM row i.e.BG, L, I, DK depending the receiving broadcasting system of the country. In some countries the broadcasting system can be both in BG/DK or BG/LL´. Only the TV sets produced with Pal Secam BG/DK or Pal Secam BG/LL´ systems can receive both BG/DK or BG/LL´ broadcasts. In this case the user can select the required SYSTEM using **Volume up/down** buttons.

Please note

If you do not press any buttons for 15 seconds the TV will exit the menu system.



Use the Program down button to select AUTOPROGRAM and press the OK button. A list of countries will appear. Select the desired country using **Program** and **Volume** buttons.



When you are sure the aerial is connected properly press the **OK** button. Autoprogam will start. AUTOPROGRAM will flash.

To cancel Autoprogram whilst it is working press the **Menu** button repetitively.

As Autoprogram stores a channel it will appear briefly on the screen before the search continues.

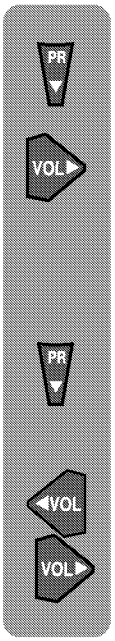
Your TV is now tuned and ready to use.

Please note:

If auto sort fails to arrange the programmes in the required sequence please refer to programme organising.

Manual tuning

If you want to tune manually:



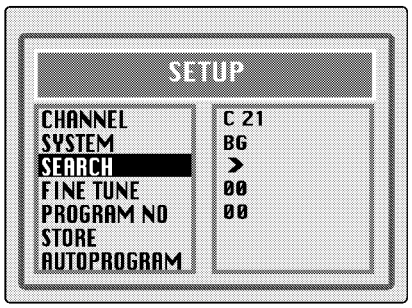
In the Setup menu select PROGRAM NO using the **Program down** button and use the **Volume up** button to change the Program No to 01.

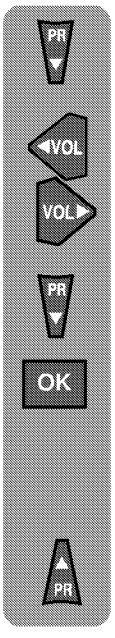
Starting with Program 01, tune in the first channel as follows:

Use the **Program down** button to select SEARCH.

Press the **Volume up** or **Volume down** button to start the tuning search.

When the search finds a strong channel signal it will stop searching. The picture will appear.





Use the **Program down** button to select PROGRAM NO.

Use the **Volume up/down** or numeric buttons to select the desired programme number.

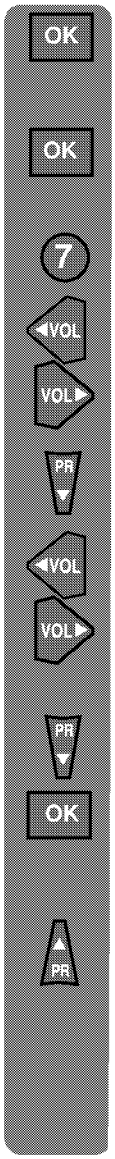
Use the **Program down** button to select STORE. Press the **OK** button and STORED will appear on the STORE line.

You have now stored the first channel.

Use the **Program up** button to select again SEARCH and continue the tuning procedure until you have tuned in all the programmes you want or the television can receive.

Tuning with channel numbers

Enter the SETUP menu by pressing the blue button.



Press **OK** button when CHANNEL row is blue.

Use OK button to select "S" for cable channels and "C" for terrestrial broadcast.

Enter the channel number using the Numeric buttons or use the **Volume up/down** buttons on your remote control.

Use the **Program down** button to select PROGRAM NUMBER.

Use the **Volume up/down** or numeric buttons to select the desired programme number.

Use the **Program down** button to select STORE. Press the **OK** button and STORED will appear on the STORE line.

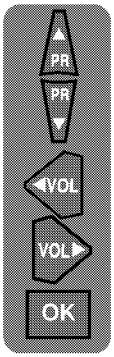
You have now stored the first channel.

Use the **Program up** button to select again CHANNEL and continue the tuning procedure until you have tuned in all the programmes you want or the television can receive.

To exit the SETUP menu press the TV/TX button.

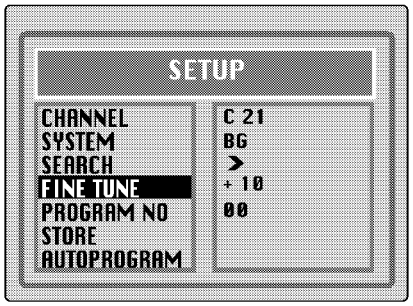
Fine tuning

Although the search and Autoprogram will automatically try and tune to the best reception, in areas of poor reception a bit of fine tuning may be required.



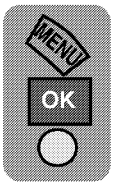
In the SETUP menu use the Program up/down buttons to select FINE TUNING. Use the Volume up and Volume down buttons to fine tune.

When you have finished use the **Program down** button to select STORE and press the **OK** button.

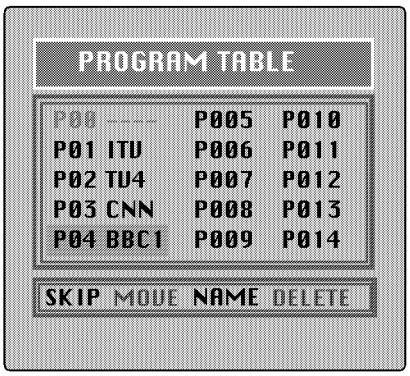


Program organising

Once you have tuned in all the channels you want, you can change their programme number, if required, and name them.



To enter the PROGRAM TABLE menu press the **Menu** button and select PROGRAM TABLE and press the **OK** button or press directly the **Yellow** button.



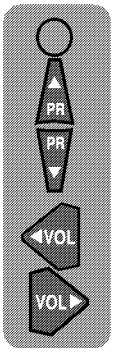
PROGRAM 01 will be selected and the channel stored under PROGRAM 01 will be shown on the screen.

The details of the program will be shown across the top of the screen i.e. P1 CH31.

The buttons used to edit the programs are shown at the bottom of the display:

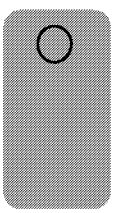
Blue button	-	Name
Green button	-	Move
Pink button	-	Delete
Red button	-	Skip

To name the programmes



Press the Blue button, the selected line will turn blue and the CH will be highlighted.

Use the **Program up** and **Program down** buttons to select the letters and numbers and the **Volume up** and **Volume down** buttons to move through the name.



Press the **Blue** button again to store the name.

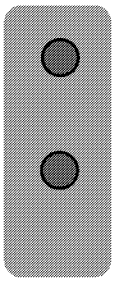
Repeat this process to name all the programmes.

Please Note

Some TV channels may send their names with teletext transmission. In this case their names will be automatically shown on the name line.

To move the programmes

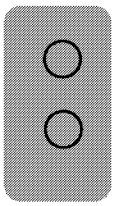
You can move the programmes around the programme list to the order you want



Select the programme you want to move and press the **Green** button. The programme will turn to yellow. Select the number you want to move and press the **Green** button again and the programme will be moved to that number.

All the following programmes are shifted down by one place.

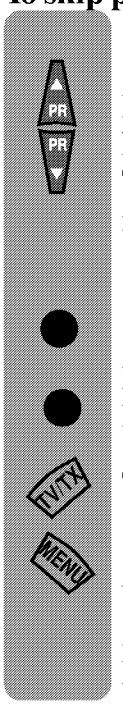
To delete a programme



To delete a programme, select it and press the **Pink** button.
The programme will be deleted.

All the following programmes are shifted up by one position.

To skip programmes



Skipped programmes will not appear when you move through the program list using the **Program up/ Program down** buttons.
They can still be selected using the numeric buttons or the OK button.

Select the programs you want to skip and press the **Red** button. The program will turn red. To unskip the program press the **Red** button again.

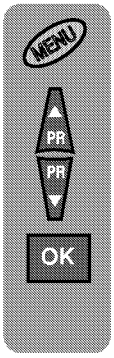
To exit the PROGRAM EDIT press the **TV/TX** button once or the **Menu** button twice.

When you select a programme, the information you entered in the PROGRAM EDIT menu will appear on the top of the screen i.e. P1 BBC1. This will disappear after about three seconds.

TV set up

The TV set up is accessed through a menu system.

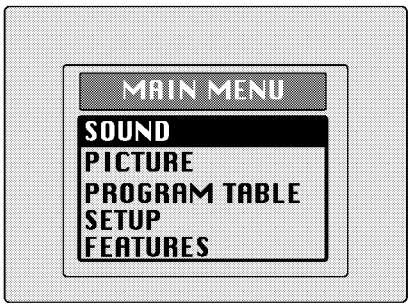
Once you have stored your set up, this is the set up the TV will default to when you switch it on.



To enter the MAIN menu press the **Menu** button.

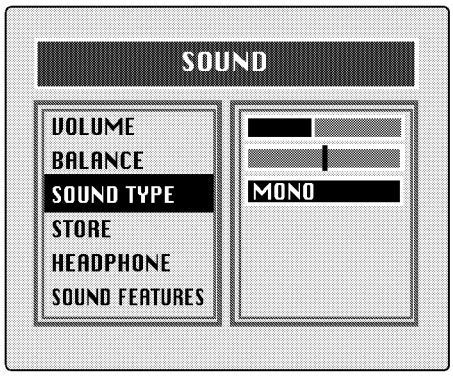
Once in the MAIN menu use the **Program up** and **Program down** buttons to select items in the menu and the **OK** to access sub menus or use the coloured fastext buttons for quick access.

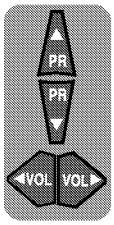
Red button - SOUND
Green button - PICTURE
Pink button - FEATURES



Please note
If you do not press any buttons for 15 seconds the TV will exit the menu system.

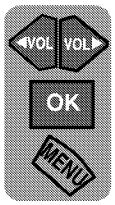
Sound menu (red button)





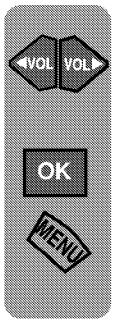
Select the required item in the menu using the **Program up/down** buttons and make the changes pressing **Volume up/down** buttons. Use the OK button to enter HEADPHONE and SOUND FEATURES sub menus.

Volume
Sets default volume using the **Volume up** and **down** buttons.



To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

Balance



Sets the sound balance mode using the **Volume up** and **down** buttons

To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

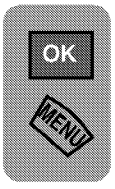
Sound type
This item shows STEREO when receiving stereo transmission and MONO for mono transmissions.

The TV can be produced to receive the NICAM broadcasts as a optional feature.

If the channel you are watching is in Nicam stereo the On Screen Display will show NICAM STEREO for a while.

Please Note
If, while watching a nicam stereo channel, the signal strength drops and the system cannot receive nicam stereo the OSD will show MONO. If the signal strength increases again and nicam stereo can be received again, the OSD will show NICAM STEREO.

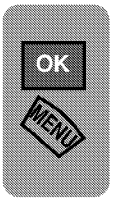
Dual I/II
Some broadcasters supply the programmes in two languages. To able to listen the second language select DUAL II by SOUND TYPE using **Volume up/down** buttons.



To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

Headphone

You can set up the volume, balance, bass treble and sound type (stereo or mono) of the headphone output.
Use **OK** button to enter the HEADPHONE menu.



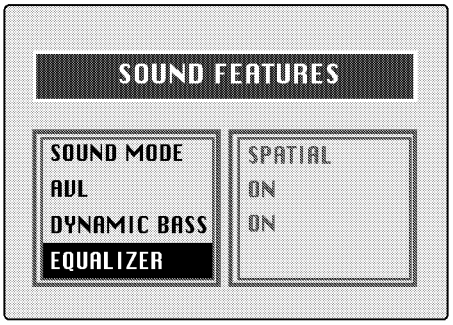
To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

Sound Features

You can set up the Sound Mode, AVL Mode Dynamic Bass (Optional), Subwoofer (Optional) and Equalizer from **Sound Features** menu.

To access the **Sound Feature**s menu press the **Red** button on the remote control and press **Volume down** button to select **Sound Features**.

Press OK to enter the Sound Features.



Sound mode

You can select NORMAL, SPATIAL or DOLBY VIRTUAL (optional)using the **Volume up/down** buttons.

SPATIAL sound is an 'expanded stereo'. It gives the impression that the two speakers in the TV are further apart than they really are.

DOLBY VIRTUAL is based on Dolby Pro Logic decoding for production of the Left, Right, Centre and Virtual Surround Sound channels using two loudspeaker.

® "DOLBY", "VIRTUAL DOLBY SURROUND" and the double- D symbols are trademarks of Dolby Laboratories Licensing Corporation.

Please Note

To get the surround effects in Virtual Dolby mode, you must apply a Dolby Pro Logic coded input to the TV.
You can't adjust the AVL and EQUALIZER in DOLBY VIRTUAL mode.

AVL

TV transmitters have different sound levels. AVL (automatic volume limiting) maintains the same sound level as you switch from program to program.
To apply this press **Volume up** or **down** button and select **ON** for **AVL** in **Sound Feature**s menu.

Dynamic Bass (Optional)

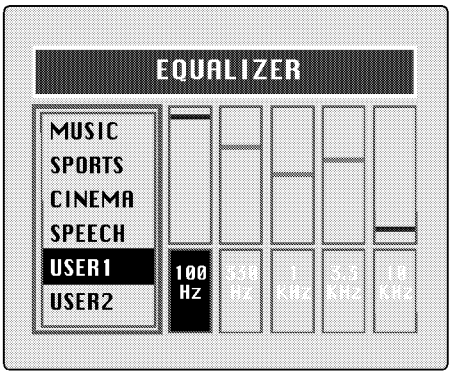
To give depth effect to bass sound you can select **Dynamic Bass** as **ON**.

To supply this press **Volume up** or **down** button and select **ON** for **Dynamic Bass** in **Sound Feature**s menu.

Note: If you select Dynamic Bass as ON Subwoofer will also be automatically ON. (If the set has subwoofer option).

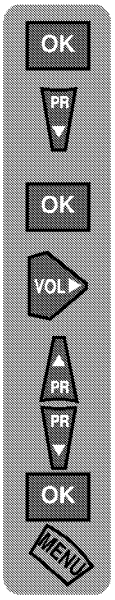
Equalizer

To access the 5 band equalizer menu press **Volume up** or **down** button and press **OK** on the **Equalizer** line.



In this menu there are a series of preset equalizer settings for different types of sound output.
There are four music settings - MUSIC, SPORTS, CINEMA, SPEECH and USER1 & USER2 modes.

USER modes allow you to set your own sound outputs as follows:



Press the OK button to enter the EQUALIZER menu.

Use the **Program down** button to select USER1.

Press OK button to adjust the frequency band levels.

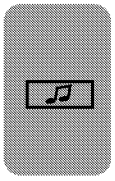
Use the **Volume up** button to select the KHz column you want to change.

Use the **Program up/down** buttons to make the changes.

To save your settings, press the **OK** button. Press the **Menu** button to go back to the previous menu.

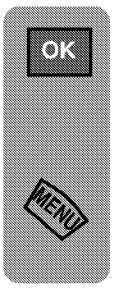
You can also adjust the settings of USER2 by the same method.

You can change the equalizer setting whilst watching the TV using the sound Smart control.



Press the sound **Smart control** to page through the different equalizer settings and select the one you want.

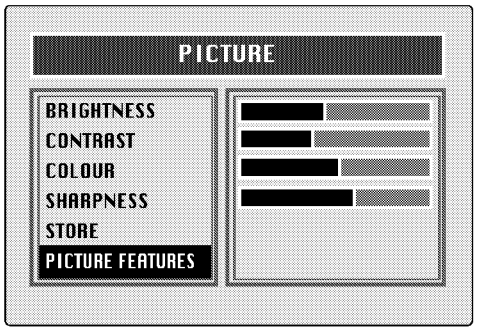
Once you have switched the TV off the equalizer setting will revert to the stored setting.



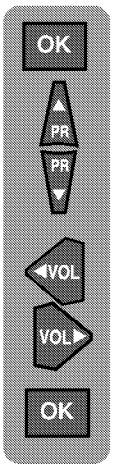
When you have finished in the Sound sub-menu select STORE and press the **OK** button.

To exit the sub-menu press the **Menu** button and return to the main menu.

Picture menu (Green button)



The picture menu allows you to set up the following:
BRIGHTNESS
CONTRAST
COLOUR
SHARPNESS
and the other PICTURE FEATURES



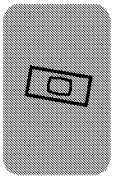
To change, for example, the colour, select it using **Program up** and **down** buttons.

Use the **Volume up** and **Volume down** buttons to change the setting.

To save your settings, select STORE and press the **OK** button. STORED will be displayed.

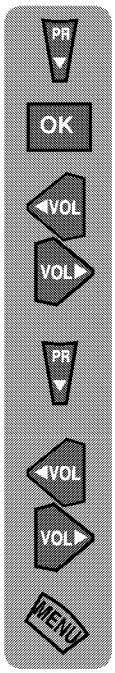
These settings are stored as USER picture type.

You can change the picture type whilst watching the TV using the picture Smart control.



Press the picture **Smart control** to page through the different picture types and select the one you want: SOFT, NATURAL, RICH or USER.

Picture Features



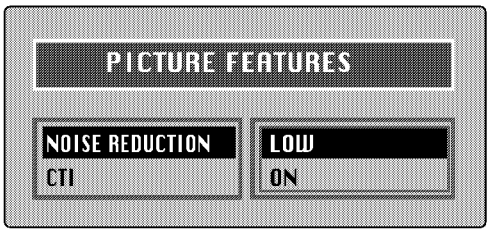
In the picture menu use the **Program down** button to select **PICTURE FEATURES** and press OK.

In this menu you can adjust the picture quality features.

Use the **Program up** and **down** buttons to select your desired picture feature and use **Volume up** and **down** buttons to adjust this feature.

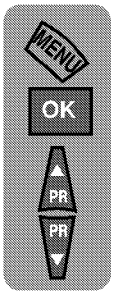
NOISE REDUCTION: You can reduce the noise effects in the pictures by selecting low, medium or high.

CTI (Colour Transient Improvement): You can improve the colour transitions in the picture by selecting ON or OFF.



IMPORTANT NOTE: Your TV has Digital Comb Filter and DLTI (Digital Luminance Transient Improvement) features to improve picture quality. These features are set ON and they can not be changed by the end user.

Features Menu (Purple button)

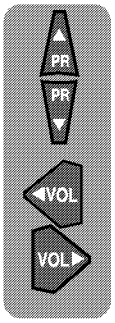


To select **Features** menu press the menu button and using the **Program up** and **down** buttons select **Features**.

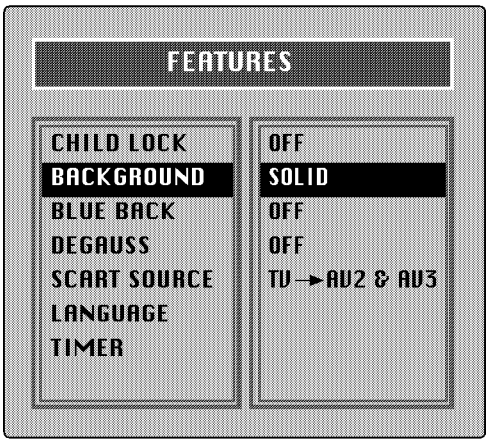
You can also select the **Features** menu directly by pressing the **purple** button on the remote control.

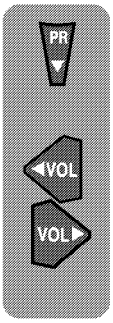
The **Features** menu allows you to set up the following:

CHILD LOCK
BACK GROUND
BLUE BACK
DEGAUSS (opt.)
AV OUT
LANGUAGE
TIMER



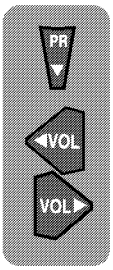
Use the **Program up** and **down** buttons to select the feature you wish to change and use **Volume up** and **down** buttons to adjust this feature.





Child Lock: Using the **Child Lock**, you can lock any Program you want so that adult channels can not be watched by children.

You can cancel child lock any time you want. To cancel **Child Lock**, select **Child Lock** as OFF when you are watching that program.



Blue Back: When there is no broadcast, you can select the background purely blue instead of snowy picture.

Select **blue back** as ON.

Degauss (Optional): If you leave your TV on stand-by mode for a long time or because of strong electro-magnetic field sources, there may be cloudy effects over the picture.

To prevent such effects select **DEGAUSS** and press **Volume up** button. **DEGAUSS** will be ON for a short time, the screen will be cleaned and **DEGAUSS** will be OFF again.

Scart Source: You can select the output from your TV to the devices connected to your 2nd and 3rd scarts. So if you want to record or copy the program you are watching, you should output this program to AV2 or AV3, inputs.

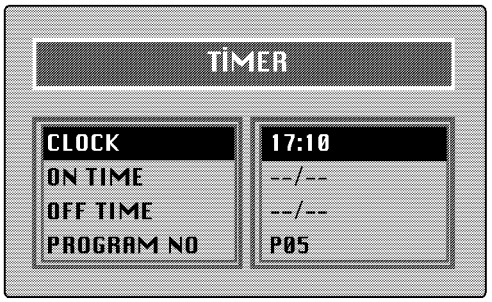
The following options are possible
• TV→AV2 & AV3: The current program you are watching,
• TUNER →AV2 & AV3: The program you have last selected,
• AV1, AV2, AV3, AV3-S, AV4, AV4-S→AV2 & AV3: The devices connected to these inputs; are output to the 2nd and 3rd scarts.

Note: 3rd. Scart is optional.

Language: You can select one of the 10 languages by pressing OK button in the language selection.

Timer: Use **Program up** and **down** buttons to select **Timer** in the features menu. Using the Timer fuction, you can switch to a specific programme at a pre-programmed time or you can turn your TV off at the time you want your TV to be turned off.

Press OK to access the **Timer** menu.



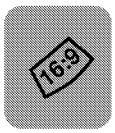
Clock: Use the numeric buttons to set the real time.

On Time: Use the numeric buttons to set the time that you want your TV to be turned on (TV should be on stand-by mode).

Off Time: Use the numeric buttons to set the time that you want your TV to be turned off (Stand-by mode).

Program No: Use the numeric buttons to set the programme number that will be shown when you set the **On Time**.

Picture format

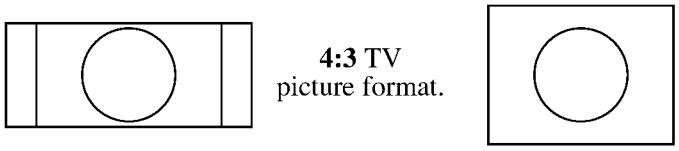


You can adjust the picture format of your TV according to the program format you are watching. Press the "16:9" button to change the Picture format.

Avaible formats are 16:9, 14:9, 4:3, Letterbox, Subtitle1, Subtitle2 (Optional).

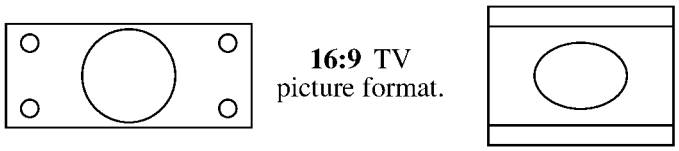
16:9 and **14:9** are the screen formats of widescreen TV sets (28" SF/PF, 32" SF/PF). The TV will automatically switch to this format if it detects 16:9 format from the SCART inputs.

16:9 Colour television **4:3 Colour television**



4:3 TV picture format.

14:9 TV picture format.



16:9 TV picture format.

L Box (Letter box), Useful for watching video, some film formats and Pal-Plus format.

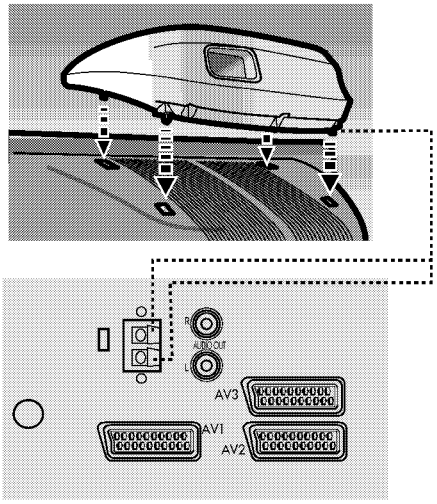
Subtitle1: If you can not see subtitles at the bottom of the screen, especially when watching 4:3 pictures in Letter box format, select Subtitle1.

Subtitle2: When Subtitle1 is not enough,select the picture format as Subtitle2.

Subwoofer (optional)

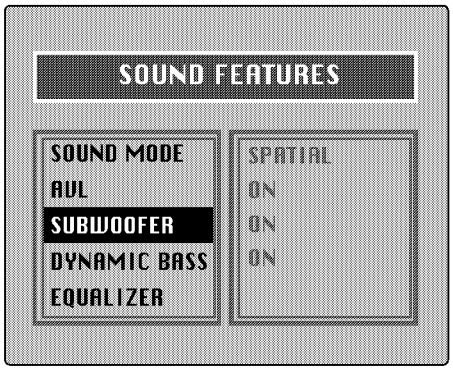
A sub woofer speaker can be fitted within the TV case as an option depending to the model.

For 33"(84cm) TV sets there is an external subwoofer (optional) to be fixed as shown below.



Select Sound menu and press **Program down** button to access Sound Features menu.
Press **Program down** button and select SUBWOOFER line.

Press the **Volume up** button to switch the Subwoofer on or off.



Note: If your TV has Subwoofer and if you turn on the Dynamic Bass, the subwoofer will also automatically turn on. You can not turn your subwoofer off when Dynamic Bass is on.

Setup menu (blue button)

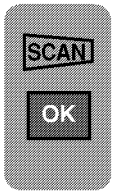
Program table menu (yellow button)

These two menus are explained under 'Tuning the TV'and "Program Organising".

OTHER FEATURES

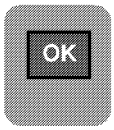
Picture freeze

When you press "FREEZE" key on your remote control, the picture on the screen becomes fixed. To get out of the position, press the same key again.



Picture scan (Optional)

You can scan the programmes starting from the current programme you have been watching, on the screen within twelve frames. Press "**SCAN**" key on your command for this.
To view the desired one from these programmes, press "**OK**" during scanning. The programme you chose will appear on the screen. To exit, press "**SCAN**" key.
Blank programmes will not be scanned.



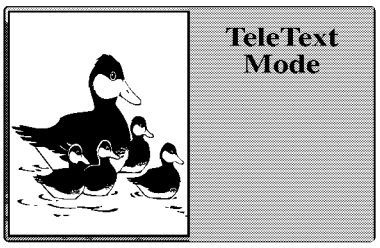
Zoom Function (Optional)

Pressing OK button zooms in to the picture. Zoom function is performed towards the center of the picture.

There are 3 steps Zoom, each time you press the OK button.
ZOOM1, ZOOM2, ZOOM3.
You can also scroll on the picture by pressing **Program up** or **down** and **Volume up** and **down** buttons.

PAT (Picture and Text)

In the double window function, you can also display the teletext screen in the second window. Press the PAT button to see the PAT mode. To exit the PAT mode press the TV/TXT button and return to the main screen.



Using Teletext

Teletext is an information system that displays text on your TV screen. Using the teletext control buttons you can view pages of information that are listed in the teletext index.

Please Note
No on screen display is available in text mode. The contrast, brightness and colour cannot be changed but the volume control is still available.

To enter Text mode

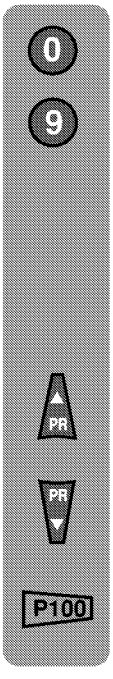
Please Note
Make sure the TV channel you are watching transmits teletext.

Press the **TV/TEXT** button. The text page will appear, normally the index page.

To exit Text mode

Press the **TV/TXT** button. The TV will return to the channel you were watching.

To select a page of text



Find the number of the page in the index and enter it using the **Numeric** buttons. The number of the page will appear in the top left hand corner of the screen.

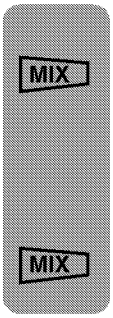
The page counter will search for your page. When it finds it, the page will be displayed.

To move to the next page of text press the **Program up** button.

To move to the previous page press the **Program down** button.

To return to the index page press the **P100** button.

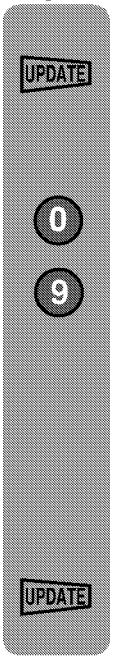
TV/text mix



To view a page of text whilst watching a TV programme press the **MIX** button. The text will be superimposed over the TV programme.

Press the **MIX** button again to return to the text page.

Page search whilst watching TV



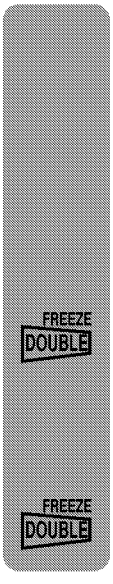
In Text mode press the Update button. The TV will return to TV mode with the text page number in the top left hand corner of the screen.

Enter the page number you want using the **Numeric** buttons.

The top line of the text page will appear whilst the text searches for your page. When the page is found the number will remain in the top left hand corner of the screen.

Press the **Update** button to view your selected page of text.

Double height text



If you have difficulty reading the text on the TV you can double the height of the text.

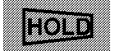
Press the **Double height** button. The top half of the page will be displayed in double height text.

Press the **Double height** button again. The bottom half of the page will be displayed in double height text.

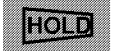
Press the **Double height** button again to return to the full page.

Page Stop

If the page of text you have selected contains sub pages, these sub pages will automatically be displayed in order with a delay to allow you to read the page.



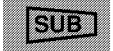
To stop the move to the next sub page press the **HOLD** button. STOP will appear in the top left hand corner.



To continue moving through the sub pages press the **HOLD** button again.

To select a sub page

If the page of text you are viewing contains sub pages, the number of the sub page you are on and the total number of sub pages is displayed on the right of the screen i.e. 1/7.



To select a sub page press the **SUB** button. The number in the top left hand corner will be replaced by S followed by 4 asterisks.

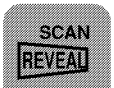
Enter the number of the sub page, using the **Numeric** buttons in the format S0001 for sub page 1.

The teletext will search for the sub page. This may take some time. To return to the TV whilst the teletext is searching press the **Update** button.

When the page number is found it will appear in the top left hand corner of the screen.

Press the **Update** button again to view the text page.

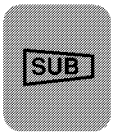
To reveal information



Press the **Rev** button to reveal concealed information (quiz answers etc.).

Press the **Rev** button again to conceal the information again.

Clock



Press the **Sub** button, whilst watching a TV program , to display the time.

Fast text

At the bottom of the teletext screen is a row of subject headings in red, green yellow and blue.

The remote control has a row of coloured buttons corresponding to the row of coloured subjects on the screen.

Pressing one of the coloured buttons will take you directly to the page corresponding to the subject heading.

Toptext (optional)

At the bottom of the teletext screen is a row of subject headings in yellow and blue. Pressing yellow or blue buttons on the remote control, selects the related Subject. Next page can be selected by pressing the red button and previous page can be selected by pressing the green button.

Note: Fastext and Toptext features are not available in every program.

Connecting external equipment

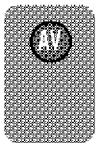
You can connect a wide range of audio and video equipment to your TV.

Connecting a video recorder

① Via SCART
Make sure the TV and video recorder are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the video recorder and the other end into one of the SCART sockets on the back of the TV.

Switch on the video recorder and the TV.



Press the **AV** button on the remote control to select AV1, AV2 or AV3 (optional) to correspond with SCART socket you are using on the back of the TV.

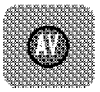
Please note:
You can connect a RGB external equipment via Scart 3 (optional) or Scart 1. It is necessary to you use full Scart cable for this purpose.

Select the video outputs of external device by using its menu to RGB if it's avaible.

② Via RCA lead (optional)
Make sure the TV and video recorder are both switched off.

Plug one end of the RCA lead into the video and audio out sockets on the back of the video recorder and plug the other end into the video and audio in sockets of the TV.

If the sound is in mono use the Audio Input L. In the SOUND menu select MONO.



Press the **AV** button repetitively and select the AV3 (AV4 optional) mode.

Please note:
When using RCA lead, you should select AV4 in 3 Scart models and AV3 in 2 Scart models.

③ Via aerial socket

Make sure the TV and video recorder are both switched off.

Unplug the aerial lead form the TV and plug it into the aerial socket on the video recorder (if fitted).

Plug a coaxial plug into the RF out socket on the rear of the video recorder and plug the other end into the aerial socket of the TV.

Switch on the video recorder and the TV.

If your video recorder has a test signal, switch it on. (Refer to the video recorder user guide).

See 'Tuning the TV' and carry out the tuning procedure for the video recorder test signal. Select a programme number 0.

④ S-Video Player

If you have an S-Video player you can connect it to SCART socket 3 (optional) via an adaptor from scart to S-Video/RCA audio (not supplied).

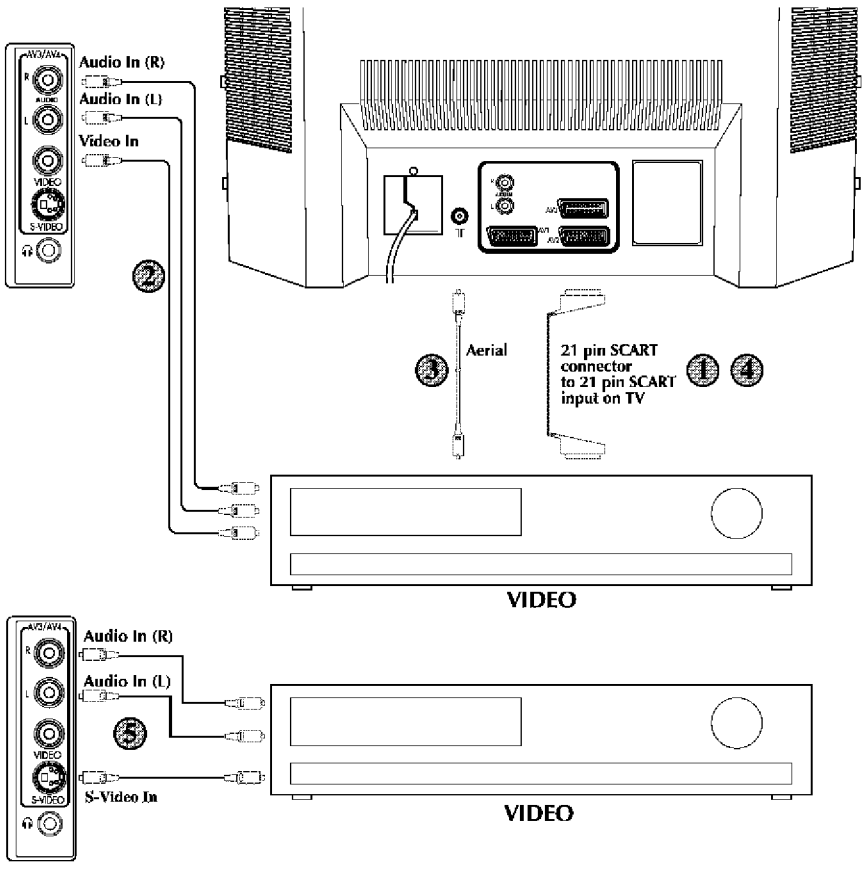
Press the **AV** button repetitively to select AV3-S.(3 scart models only)

⑤ Via RCA lead and S-Video socket

You can also connect it through the S-Video socket of the TV.

Plug the S-Video plug into the S-Video socket and the audio leads into the audio sockets.

Press the **AV** button repetitively to select AV3-S or AV4-S (optional).



Connecting a DVD player

① Via SCART
Make sure the TV and DVD player are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the DVD player and the other end into one of the SCART sockets on the back of the TV.

Switch on the DVD and the TV.

Press the **AV** button on the remote control to select AV1, AV2 or AV3 correspond with SCART socket you are using on the back of the TV.

Note: Scart 1 and Scart 3 (optional) will give you RGB picture quality.
For DVD connections RGB capable scart sockets (AV1 or AV3) are recommended.

② Via RCA lead (optional)
Make sure the TV and DVD player are both switched off.

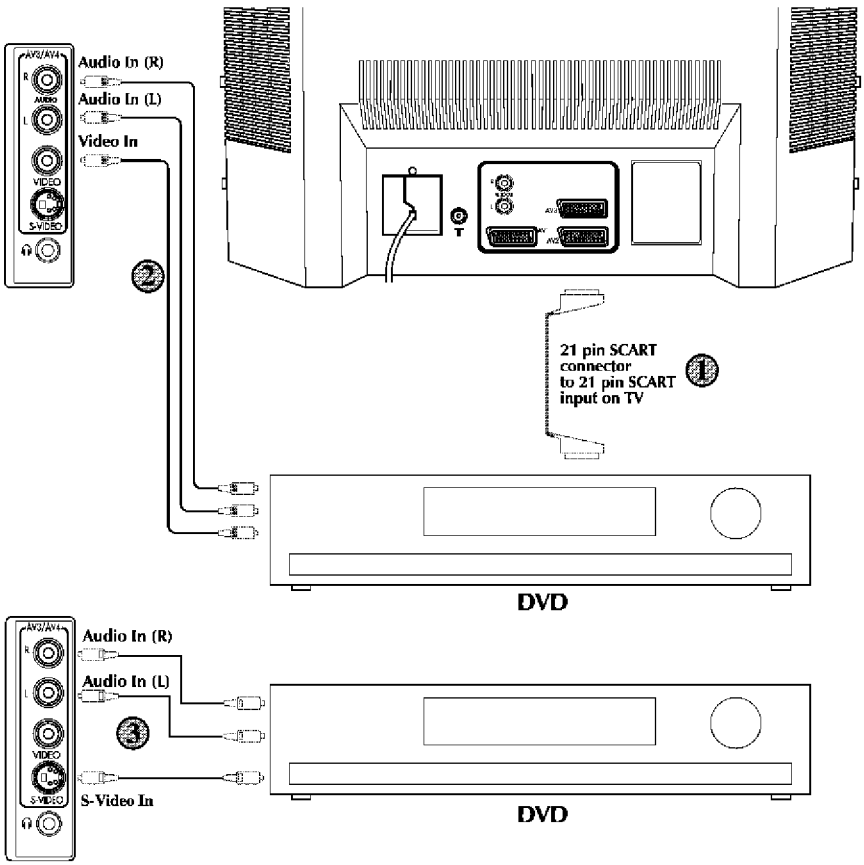
Plug one end of the RCA lead into the video and audio out sockets on the back of the DVD player and plug the other end into the video and audio in sockets of the TV.

Press the **AV** button repetitively and select the AV3 (AV4 optional) mode.

③ Via RCA lead and S-Video socket
You can also connect it through the S-Video socket of the TV.

Plug the S-Video plug into the S-Video socket and the audio leads into the audio sockets.

Press the **AV** button repetitively to select AV3-S or AV4-S (optional).



Connecting a decoder

Via SCART
Make sure the TV and decoder are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the decoder and the other end into the SCART 1
on the back of the TV.

Switch on the decoder and the TV.

Press the **AV** button on the remote control to select AV1.

② Via RCA lead
Make sure the TV and decoder are both switched off.

Note: For Decoder connection Via RCA lead your Decoder device should have the tuner built in.

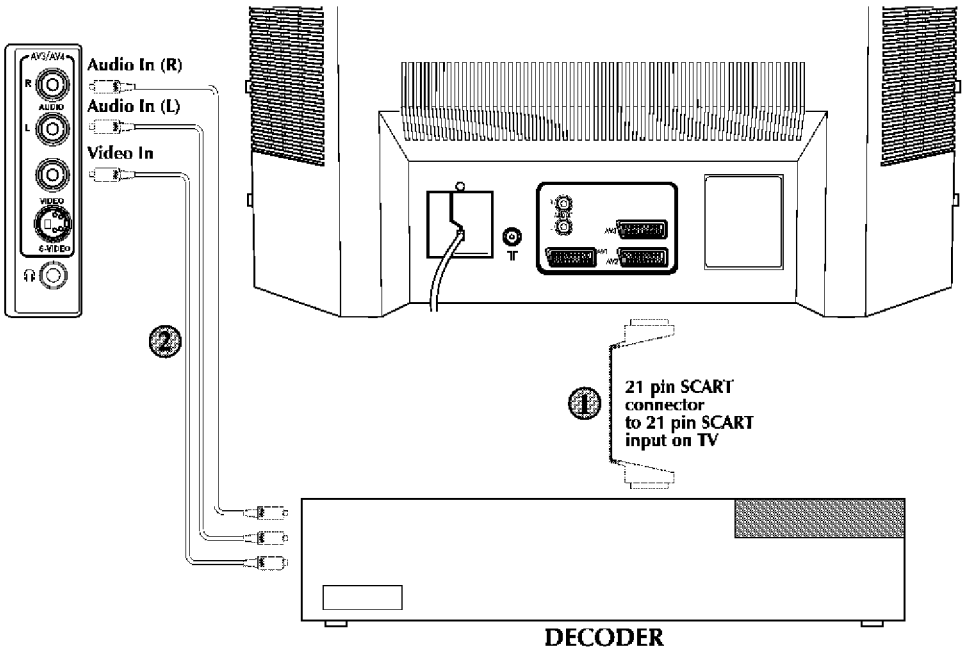
Plug one end of the RCA lead into the video and audio out sockets on the back of the decoder and plug the other end into the video and audio in sockets on the TV.

Press the **AV** button repetitively and select the AV3 mode (AV4 optional).

Please Note
You can record from one external device to another via scart sockets. You should select the source and destination of video using FEATURES menu. If you select the source as AV3/AV3-S or AV4/AV4-S (optional) you will have a " WARNING: COPY FUNCTION ACTIVE" message on the screen. You will not have picture at AV4/AV4-S if you select source AV3/AV3-S or vice versa.

You can connect NTSC supported equipment to the TV via the SCART sockets and adjusting the colour via the PICTURE menu.

Select TINT by using **Program down** button and use to adjust the colour. **Volume up** and **down** buttons.



Help and service tips

The TV does not work

Make sure it is plugged into the mains supply and switched on.

Poor picture

- Is the aerial plugged in?
- If you are using a set top aerial is it properly aligned for the best signal.
- Make sure the aerial is not to close to neon lights, loudspeakers etc.
- Try changing the direction of the outdoor aerial. High buildings and mountains can cause ghost pictures or double images.
- The picture quality may be reduced by connecting two external sources at once. Disconnect one of the sources.
- Adjust the fine tuning.

No picture

- Is the aerial plugged in properly?
- Is the aerial lead damaged?
- Are all the plugs in the aerial lead fitted correctly?
- Have you pressed the correct buttons on the remote control?

No sound

- Is the sound muted? Press the Mute button.
- Is the volume turned down?
- Are there headphones connected?

Sound coming from only one speaker

- Is the balance set to one side? See the sound menu.
- If you have external speakers, has one of them become disconnected.

No response to the remote control

- Try changing the batteries.
- Is there an obstruction between the remote control and the sensor on the TV.

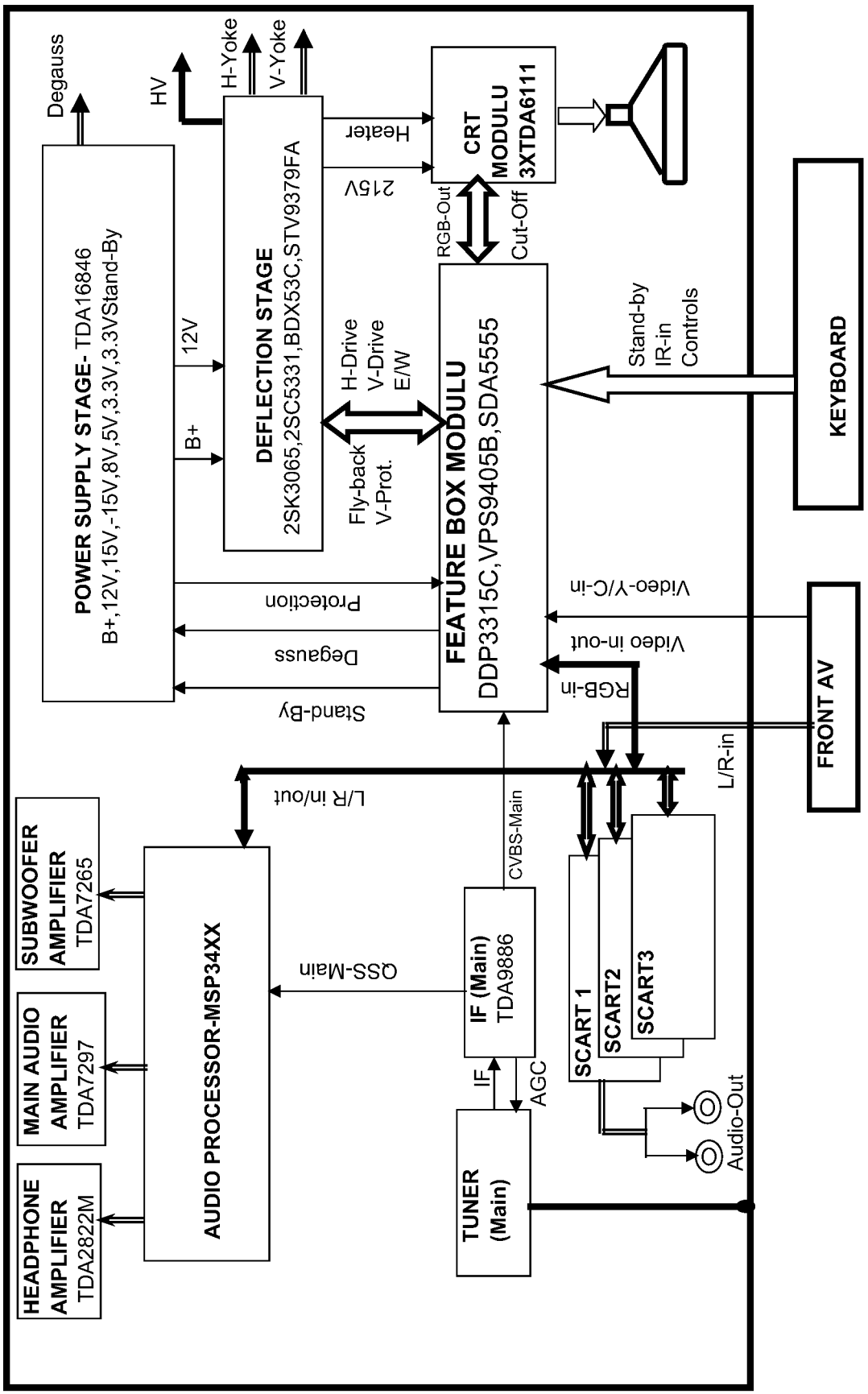
If nothing works

If you have tried the above solutions and none seem to work, try switching the unit off and on again.

If this does not work contact your supplier or TV repair technician. Never attempt to repair a defective TV yourself.

Symptoms	Check if on/off switch is "on"	Try a different channel, if OK, probably station trouble	Check aerial connections on back of set	Check aerial for broken wires	Re orientate aerial	Probably local interference, such as an appliance	Adjust fine tuning control	Adjust brightness control	Adjust contrast control	Check if station is broadcasting colour	Adjust colour control	Check batteries in the remote control handset.	Switch the TV set OFF and ON from mains
No picture, no sound	✓	✓	✓	✓			✓						
Poor sound, picture OK		✓			✓		✓						
Poor Picture, sound OK		✓	✓	✓	✓		✓	✓					
Weak picture		✓	✓	✓	✓		✓						
Blurred picture		✓		✓	✓		✓						
Double image		✓	✓	✓	✓		✓						
Lines in picture		✓		✓	✓	✓	✓						
Distorted picture		✓		✓	✓		✓						
Weak reception on some channels		✓	✓	✓	✓	✓	✓						
Horizontal bars				✓	✓	✓							
Picture rolls vertically		✓		✓	✓	✓							
Poor colour		✓	✓	✓	✓	✓	✓	✓	✓		✓		
No colour		✓	✓	✓	✓		✓			✓	✓		
Remote control not working												✓	✓
TV does not accept any command													✓
Teletext rolling up/down													✓

22.2 CHASSIS BLOCK DIAGRAM

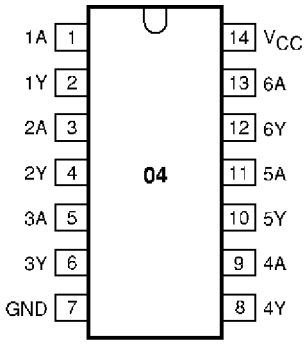


74LVC04A

Hex Inverter

FEATURES

- 5 V tolerant inputs for interfacing with 5 V logic
- Wide supply voltage range from 1.2 to 3.6 V
- CMOS low power consumption
- Direct interface with TTL levels
- Inputs accept voltages up to 5.5 V
- Complies with JEDEC standard no. 8-1A
- Specified from –40 to +85 °C and –40 to +125 °C.



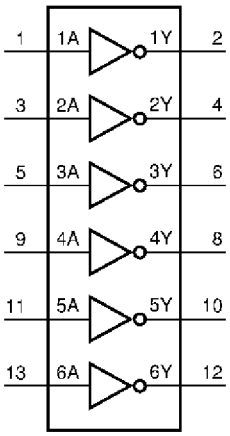
Pin configuration.

DESCRIPTION

The 74LVC04A is a high-performance, low-power, low-voltage, Si-gate CMOS device, superior to most advanced CMOS compatible TTL families.

Inputs can be driven from either 3.3 or 5 V devices. This feature allows the use of these devices as translators in a mixed 3.3 and 5 V environment.

The 74LVC04A provides six inverting buffers.



Logic symbol.

FAN117A

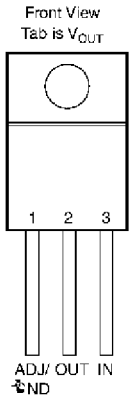
1A Adjustable/Fixed Low Dropout Linear Regulator

Features

- Low dropout voltage
- Load regulation: 0.05% typical
- Trimmed current limit
- On-chip thermal limiting
- Standard SOT-223, TO-220, and TO-252 packages
- Three-terminal adjustable or fixed 1.8V, 2.5V, 2.85V, 3.3V, 5V

Applications

- Active SCSI terminators
- High efficiency linear regulators
- Post regulators for switching supplies
- Battery chargers
- 12V to 5V linear regulators
- Motherboard clock supplies



Description

The FAN1117A and FAN1117A-1.8, -2.5, -2.85, -3.3 and -5 are low dropout three-terminal regulators with 1A output current capability. These devices have been optimized for low voltage where transient response and minimum input voltage are critical. The 2.85V version is designed specifically to be used in Active Terminators for SCSI bus.

Current limit is trimmed to ensure specified output current and controlled short-circuit current. On-chip thermal limiting provides protection against any combination of overload and ambient temperatures that would create excessive junction temperatures.

Unlike PNP type regulators where up to 10% of the output current is wasted as quiescent current, the quiescent current of the FAN1117A flows into the load, increasing efficiency.

The FAN1117A series regulators are available in the industry-standard SOT-223, TO-220, and TO-252 (DPAK) power packages.

HY57V641620HG

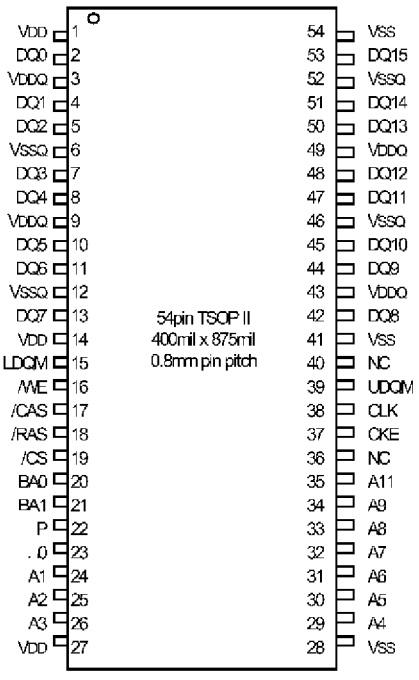
4 Banks x 1M x 16Bit Synchronous DRAM

FEATURES

- Single 3.3±0.3V power supply
- All device pins are compatible with LVTTL interface
- JEDEC standard 400mil 54pin TSOP-II with 0.8mm of pin pitch
- All inputs and outputs referenced to positive edge of system clock
- Data mask function by UDQM or LDQM
- Internal four banks operation
- Auto refresh and self refresh
- 4096 refresh cycles / 64ms
- Programmable Burst Length and Burst Type
  - 1, 2, 4, 8 or Full page for Sequential Burst
  - 1, 2, 4 or 8 for Interleave Burst
- Programmable $\overline{CAS}$ Latency ; 2, 3 Clocks

Pin Description

PIN	PIN NAME	DESCRIPTION
CLK	Clock	The system clock input. All other inputs are registered to the SDRAM on the rising edge of CLK
CKE	Clock Enable	Controls internal clock signal and when deactivated, the SDRAM will be one of the states among power down, suspend or self refresh
$\overline{CS}$	Chip Select	Enables or disables all inputs except CLK, CKE and DQM
BA0,BA1	Bank Address	Selects bank to be activated during $\overline{RAS}$ activity Selects bank to be read/written during $\overline{CAS}$ activity
A0 ~ A11	Address	Row Address : RA0 ~ RA11, Column Address : CA0 ~ CA7 Auto-precharge flag : A10
$\overline{RAS}$, $\overline{CAS}$, $\overline{WE}$	Row Address Strobe, Column Address Strobe, Write Enable	$\overline{RAS}$, $\overline{CAS}$ and $\overline{WE}$ define the operation Refer function truth table for details
LDQM, UDQM	Data Input/Output Mask	Controls output buffers in read mode and masks input data in write mode
DQ0 ~ DQ15	Data Input/Output	Multiplexed data input / output pin
VDD/VSS	Power Supply/Ground	Power supply for internal circuits and input buffers
VDDQ/VSSQ	Data Output Power/Ground	Power supply for output buffers
NC	No Connection	No connection

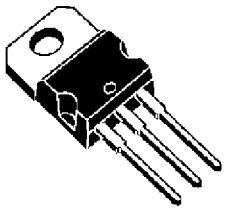


Pin Configuration

LD 1086

1.5A Low Drop Fixed And Adjustable Positive Voltage Regulators

- TYPICAL DROPOUT VOLTAGE 1.3V AT 1.5A
- THREE TERMINAL ADJUSTABLE OR FIXED OUTPUT VOLATGE 1.8V, 2.5V, 2.85V, 3.3V, 3.6V, 5V, 8V, 9V, 12V
- GUARANTEED OUTPUT CURRENT UP TO 1.5A
- OUTPUT TOLERANCE ±1% AT 25°C AND ±2% IN FULL TEMPERATURE RANGE
- INTERNAL POWER AND THERMAL LIMIT
- WIDE OPERATING TEMPERATURE RANGE -40°C TO 125°C
- PACKAGE AVAILABLE: TO-220, D^2PAK, D^2PAK/A, DPAK,
- PINOUT COMPATIBILITY WITH STANDARD ADJUSTABLE VOLTAGE REGULATORS



DESCRIPTION

The LD1086 is a LOW DROP Voltage Regulator able to provide up to 1.5A of Output Current. Dropout is guaranteed at a maximum of 1.5V at the maximum output current, decreasing at lower loads. The LD1086 is a pin compatible with older 3-terminal adjustable regulators, but has better performances in term of drop and output tolerance. A 2.85V output version is suitable for SCSI-2 active termination. Unlike PNP regulators, where a part of the output current is wasted as quiescent current, the LD1086 quiescent current flow into the load, so increase efficency. Only a 10 µF minimum capacitor is needed for stability.

NCP1117

1.0A Low-Dropout Positive Fixed And Adjustable Voltage Regulators

The NCP1117 series are low dropout positive voltage regulators that are capable of providing an output current that is in excess of 1.0 A with a maximum dropout voltage of 1.2 V at 800 mA over temperature. This series contains eight fixed output voltages of 1.5 V, 1.8 V, 2.0 V, 2.5 V, 2.85 V, 3.3 V, 5.0 V, and 12 V that have no minimum load requirement to maintain regulation. Also included is an adjustable output version that can be programmed from 1.25 V to 18.8 V with two external resistors. On chip trimming adjusts the reference/output voltage to within ±1.0% accuracy. Internal protection features consist of output current limiting, safe operating area compensation, and thermal shutdown. The NCP1117 series can operate with up to 20 V input. Devices are available in SOT–223 and DPAK packages.

(Top View)

Pin: 1. Adjust/Ground
2. Output
3. Input

Features

- Output Current in Excess of 1.0 A
- 1.2 V Maximum Dropout Voltage at 800 mA Over Temperature
- Fixed Output Voltages of 1.5 V, 1.8 V, 2.0 V, 2.5 V, 2.85 V, 3.3 V, 5.0 V, and 12 V
- Adjustable Output Voltage Option
- No Minimum Load Requirement for Fixed Voltage Output Devices
- Reference/Output Voltage Trimmed to ±1.0%
- Current Limit, Safe Operating and Thermal Shutdown Protection
- Operation to 20 V Input

Applications

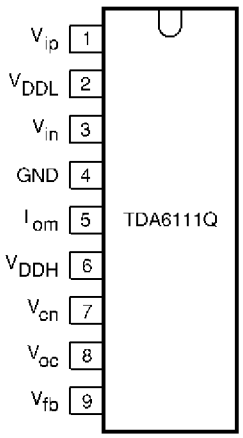
- Consumer and Industrial Equipment Point of Regulation
- Active SCSI Termination for 2.85 V Version
- Switching Power Supply Post Regulation
- Hard Drive Controllers
- Battery Chargers

FEATURES

- High bandwidth and high slew rate
- Black-current measurement output for Automatic Black-current Stabilization (ABS)
- Two cathode outputs; one for DC currents, and one for transient currents
- A feedback output separated from the cathode outputs
- Internal protection against positive appearing Cathode-Ray Tube (CRT) flashover discharges
- ESD protection
- Simple application with a variety of colour decoders
- Differential input with a designed maximum common mode input capacitance of 3 pF, a maximum differential mode input capacitance of 0.5 pF and a differential input voltage temperature drift of 50 μV/K
- Defined switch-off behaviour.

GENERAL DESCRIPTION

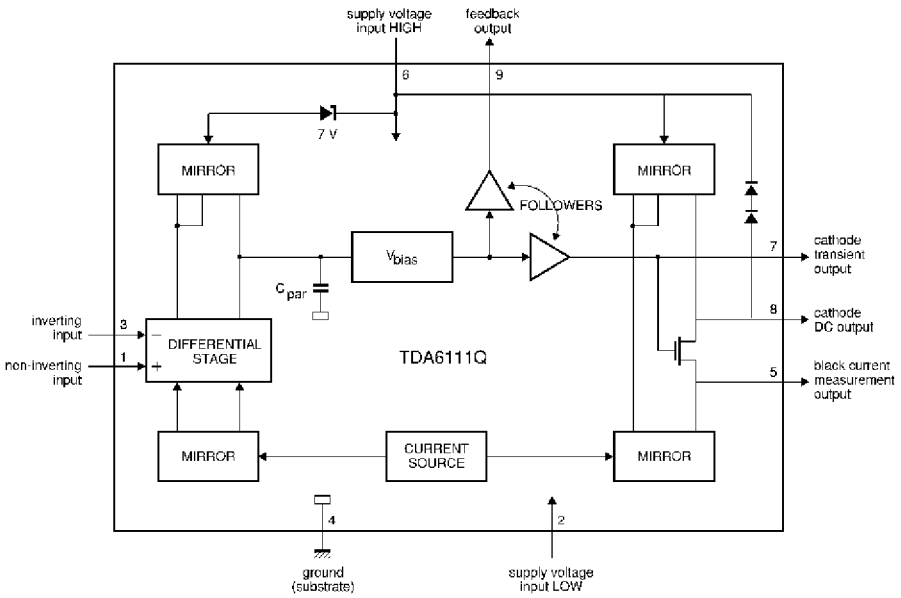
The TDA6111Q is a video output amplifier with 16 MHz bandwidth. The device is contained in a single in-line 9-pin medium power (DBS9MPF) package, using high-voltage DMOS technology, intended to drive the cathode of a colour CRT.



Pin configuration.

PINNING

SYMBOL	PIN	DESCRIPTION
V_{ip}	1	non-inverting voltage input
V_{DDL}	2	supply voltage LOW
V_{in}	3	inverting voltage input
GND	4	ground, substrate
I_{om}	5	black current measurement output
V_{DDH}	6	supply voltage HIGH
V_{cn}	7	cathode transient voltage output
V_{oc}	8	cathode DC voltage output
V_{fb}	9	feedback voltage output



DDP 3315C

Display and Deflection Processor

Introduction

The DDP 3315C is a mixed-signal single-chip digital display and deflection processor, designed for high-quality backend applications in double scan and HDTV TV sets with 4:3 or 16:9 picture tubes. The interfaces qualify the IC to be combined with state of the art digital scan rate converters, as well as analog HDTV sources. The DDP 3315C contains the entire digital video component, deflection processing, and all analog interfaces to display the picture on a CRT. The main features are

Video Processing

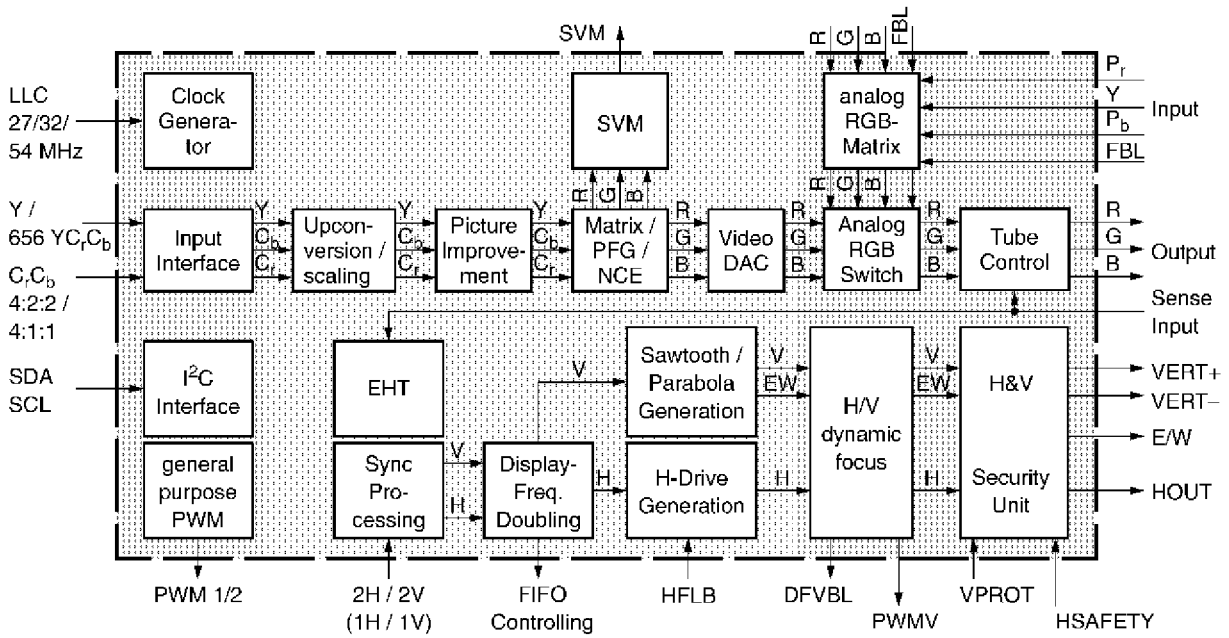
- linear horizontal scaling (0.25 ... 4), as well as nonlinear horizontal scaling "panorama vision"
- dynamic black level expander
- luma sharpness enhancement by dynamic peaking and luma transient improvement (LTI)
- color transient improvement (CTI)
- programmable RGB matrix
- black stretch, blue stretch, gamma correction via programmable Non-linear Colorspace Enhancer (NCE) on RGB
- two analog double scan inputs with fast blank (one RGB and one $RGB/YC_rC_b/YP_rP_b$ selectable)
- average and peak beam current limiter
- automatic picture tube adjustment (cutoff, drive)

Deflection Processing

- scan velocity modulation output
- digital EHT compensation for vertical / east-west
- vertical angle and bow correction
- differential vertical outputs
- vertical zoom via deflection adjustment
- horizontal and vertical protection circuit
- horizontal frequency for VGA/SVGA/1080I
- black switch off procedure
- supports horizontal and vertical dynamic focus

Miscellaneous

- selectable ITU-R 601 4:1:1 / 4:2:2 YC_rC_b input at 27/32 MHz or double scan ITU-R 656 input at 54 MHz line-locked clock
- crystal oscillator for horizontal safety
- picture frame generator
- hardware for simple 50/60 Hz to 100/120 Hz conversion (display frequency doubling)
- PQFP80 package, 5 V analog and 3.3 V digital supply



VSP 94x7B

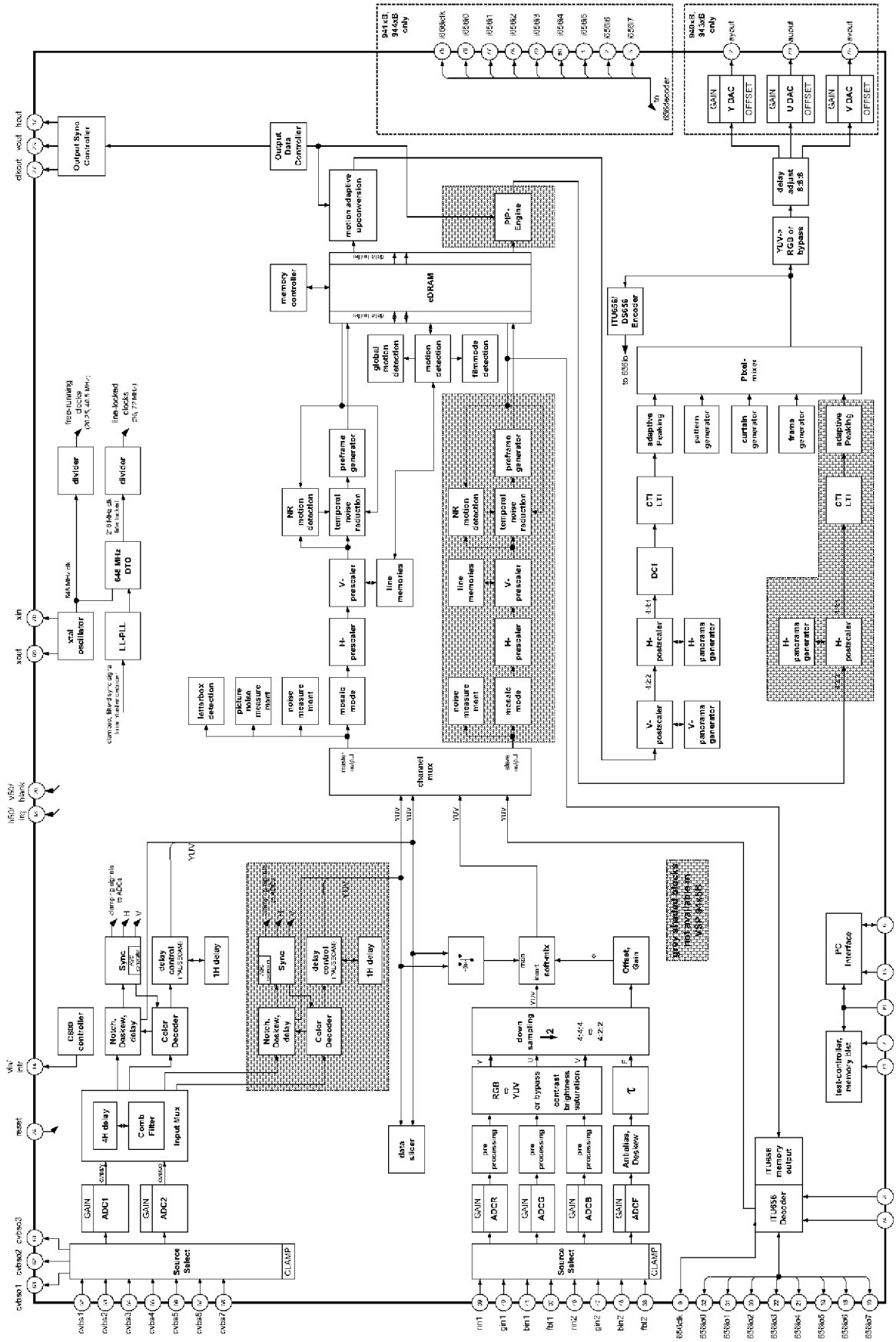
General Description

The VSP 94xxB (OPTIMUS) is a new component of the Micronas MEGAVISION® single-chip-IC family. The VSP 94xxB family comprises all main functions of a digital featurebox in one monolithic IC. The amount of features is splitted up to different levels from mid to high end, always giving highest picture quality. The family is ideally suited to work in conjunction with the deflection processors SDA 9380, DDP3310B or DDP3315C (dependent on 94xxB version). In combination with the 'digital TV decoder' MDE 9500 double-scan iDTV are possible. 50/60Hz derivatives are also available. The device comprises digital multistandard color decoder for master and slave channel, a RGB interface with fast-blank capability (SCART), scaling units including panorama, embedded DRAM for upconversion, high performance frame based upconversion algorithms, picture improvements, temporal noise reduction as well as A/D and D/A converter.

Features

- **Different Application modes**
  - FSM: frame based high performance master with PiP
  - SSC: Split screen ('Double Window')
  - MUP: Multi pictures, several still and 2 live pictures possible
  - PC: PC signal in combination with TV signal (TV in PC or PC in TV)
- **Data Acquisition connectivity**
  - Up to seven (9425B/9427B: nine) CVBS inputs, up to two Y/C inputs,
  - Up to three CVBS outputs (even when Y/C input)
  - ITU-R 656 compatible digital input
  - RGB/FBL or YUV or YUV-H-V input
  - 9 bit amplitude resolution for CVBS/Y/C A/D converter
  - 8 bit amplitude resolution for RGB/FBL A/D converter
- **Multi-standard color decoder with 4H comb-filter**
  - PAL/NTSC/SECAM including all substandards
  - Automatic recognition of chroma standard
  - AGC (Automatic Gain Control)
- **Second Multi-standard color decoder for slave channel** *(94x7B only)*
- **Processing of two input channels independently: master and slave channel**
- **Motion adaptive temporal noise reduction for master and slave channel**
  - Field or frame based temporal noise reduction for luminance and chrominance
- **Pre-Scaling of the $1f_H$ signal (master and slave channel)**
  - horizontal scaling factors: 1.5...[2 pixel resolution]...1/28
  - vertical scaling factors: 1...[1 line resolution]...1/30
- **Horizontal and vertical scaling of the $2f_H$ signal (master and slave channel)**
  - Horizontal Scaling factors: 3...[2 pixel resolution]...0.75
  - 5 zone horizontal panorama generator
- **Vertical scaling of the $2f_H$ signal (master channel)**
  - Vertical Scaling factors: 0.92...[2 line resolution]...8
  - 5 zone vertical panorama generator
- **Detection circuits**
  - Global motion and global still detection
  - Film mode and phase detection (PAL, NTSC; 2-2, 3-2 pull down)
  - measurement of the noise level (blanking)
  - measurement of the noise level (inside active picture)
  - detection of letter box formats
- **Embedded memory**
  - On-chip memory controller
  - Embedded DRAM core for field memory
  - SRAM for delay lines
- **Data format 4:2:2**
- **Read or write of memory content via 656 interface**
- **Data slicer for closed caption ('V-chip') and WSS**
- **Flexible clock and synchronization concept**
  - Horizontal line-locked or free-running mode
  - Vertical locked or free-running mode
- **Scan-rate-conversion (version dependent)**
  - Motion adaptive frame based 100/120 Hz interlaced scan rate conversion
  - Motion adaptive frame based 50/60 Hz progressive scan rate conversion
  - Special treatment for film material ('Inverse 3-2 pull down')
  - Large area and line flicker reduction
  - Simple progressive modes: AB, AA*
  - Simple interlaced modes (100/120 Hz): ABAB, AABB, AAAA, BBBB
  - No scan-rate-conversion modes (50/60 Hz): AB, AA, BB
- **Signal manipulations**
  - Still field or still frame
  - Insertion of colored background
  - 2D and 3D frames for master and slave channel
  - Snapshot
  - Windowing
  - Temporal overblending between master and slave
  - Vertical chrominance shift for improved VCR picture quality
  - Mosaic-mode generator
  - Test pattern generator
  - Demo mode
- **Sharpness improvement**
  - Digital color transition improvement (DCTI)
  - Adaptive horizontal and vertical Peaking (luminance)
  - Digital luminance transition improvement (DLTI)
  - Digital contrast improvement (DCI, master channel only)
- **(S) VGA support**
  - synchronization to external (S)VGA source possible
  - scaling of VGA picture, including TV picture and VGA display 'side-by-side'
- **Three D/A converters**
  - 9 bit amplitude resolution for YUV, RGB output
  - (nominal) 72 MHz clock frequency with two-fold oversampling
- **Digital output (version dependent)**
  - 4:4:4 YUV or RGB output with 24 or 27 bit
  - 4:2:2 YUV output with 24 or 27 bit
  - $2f_H$-8bit (656 like) digital output
  - ITU-R 656 compatible digital output
- **I²C-bus control (400 kHz)**
- **1.8V± 5% and 3.3V ± 5% supply voltages**
- **P-MQFP-80 or P-MQFP-144 package**
- **Only one crystal necessary for whole IC and all color standards**

VSP 94x7B

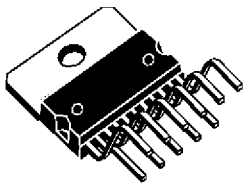


VSP 94x7B

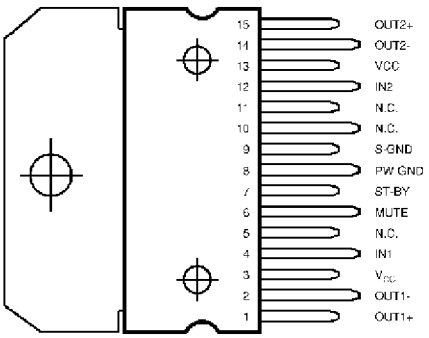
Pin No	Pin Name	Type	Function
52	CVBS1	Input	CVBS input (analog input)
53	CVBS2	Input	CVBS input (analog input)
54	CVBS3	Input	CVBS input (analog input)
55	CVBS4	Input	CVBS input or Y1 (analog input)
56	CVBS5	Input	CVBS input or C1 (analog input)
57	CVBS6	Input	CVBS input or Y2 (analog input)
58	CVBS7	Input	CVBS input or C2 (analog input)
63	CVBSOUT1	Output	CVBS output 1 (analog output)
62	CVBSOUT2	Output	CVBS output 2 (analog output)
61	CVBSOUT3	Output	CVBS output 3 (analog output)
70	XIN	Input	Crystal connection 1
69	XOUT	Output	Crystal connection 2
23	VOUT	Output	Vertical output
17	HOUT	Output	Horizontal output
1	VDDDACY	Supply	Supply DAC (Y) (3.3 V)
3	VSSDACY	Supply	Supply DAC (Y) (0 V)
78	VDDDACU	Supply	Supply DAC (U) (3.3 V)
80	VSSDACU	Supply	Supply DAC (U) (0 V)
75	VDDDACV	Supply	Supply DAC (Y) (3.3 V)
77	VSSDACV	Supply	Supply DAC (Y) (0 V)
2	AYOUT	Output	Luminance output (analog out put)
79	AUOUT	Output	Chrominance output (analog output)
76	AVOUT	Output	Chrominance output (analog output)
39	RIN1	Input	R or V IN1
40	GIN2	Input	G or Y IN1
41	BIN3	Input	B or U IN1
37	FBL1	Input	Fast blanking input 1 (H1) (analog input)
46	RIN2	Input	R or V IN2 (analog input)
47	GIN2	Input	G or Y IN2 (analog input)
48	BIN2	Input	B or U IN2 (analog input)
38	FBL2	Input	Fast blanking input 2 (H2) (analog input)
6	SDA	Input/Output	I2C - Bus data
13	SCL	Input	I2C - Bus clk
7	TMS	Input	Testmode select
24	RESET	Input	Reset input
27	CLKOUT	Output	Output clock (27 MHz)
59	VDD33C	Supply	Supply voltage CVBS (3.3 V)
60	VSS33C	Supply	Supply voltage CVBS (0 V)
50	VDDAC1	Supply	Supply voltage CVBS1 (1.8 V)
51	VSSAC1	Supply	Supply voltage CVBS1 (0 V)
64	VDDAC2	Supply	Supply voltage CVBS2 (1.8 V)
65	VSSAC2	Supply	Supply voltage CVBS2 (0 V)
44	VDD33RGB	Supply	Supply voltage RGB (3.3 V)
45	VSS33RGB	Supply	Supply voltage RGB (0 V)
42	VDDARGB	Supply	Supply voltage for RGB (1.8 V)
43	VSSARGB	Supply	Supply voltage for RGB (0 V)
35	VDDAFBL	Supply	Supply voltage for FBL (1.8 V)
36	VSAFBL	Supply	Supply voltage for FBL (0 V)
68	VDDAPLL	Supply	Supply voltage for PLL (1.8 V)
66, 5, 28, 34	VDDD	Supply	Supply voltage for digital (1.8 V)
67, 4, 29, 33, 73,11, 26	VSSD	Supply	Supply Voltage for digital (0 V)
72, 12, 25	VDDP	Supply	Supply voltage for digital (3.3 V)
32, 31, 30, 22, 21, 16, 15, 10	656IO0	Output	Digital output
9	656CLK	Output	Digital output clock
74	656HIO	Input	Separate H input for 656
8	656VIO	Input	Separate V input for 656

TDA 7265

25+25 W Amplifier with Mute and Stand-by



- WIDE SUPPLY VOLTAGE RANGE (UP TO ±25V ABS MAX.)
- SPLIT SUPPLY
- HIGH OUTPUT POWER
  25 + 25W @ THD =10%, R_L = 8Ω, V_S = ±20V
- NO POP AT TURN-ON/OFF
- MUTE (POP FREE)
- STAND-BY FEATURE (LOW I_Q)
- SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION



PIN CONNECTION

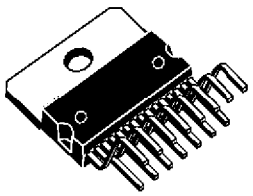
DESCRIPTION

The TDA7265 is class AB dual Audio power amplifier assembled in the Multiwatt package, specially designed for high quality sound application as Hi-Fi music centers and stereo TV sets.

TDA 7297

15+15W Dual Bridge Amplifier

- WIDE SUPPLY VOLTAGE RANGE (6V -18V)
- MINIMUM EXTERNAL COMPONENTS
  – NO SWR CAPACITOR
  – NO BOOTSTRAP
  – NO BOUCHEROT CELLS
  – INTERNALLY FIXED GAIN
- STAND-BY & MUTE FUNCTIONS
- SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION



TDA9886

I²C- Bus controlled single and multistandard Alignment-free IF-PLL demodulators

FEATURES

- 5 V supply voltage
- Gain controlled wide-band Vision Intermediate Frequency (VIF) amplifier, AC-coupled
- Multistandard true synchronous demodulation with active carrier regeneration: very linear demodulation, good intermodulation figures, reduced harmonics, and excellent pulse response
- Gated phase detector for L and L-accent standard
- Fully integrated VIF Voltage Controlled Oscillator (VCO), alignment-free, frequencies switchable for all negative and positive modulated standards via I²C-bus
- Digital acquisition help, VIF frequencies of 33.4, 33.9, 38.0, 38.9, 45.75, and 58.75 MHz
- 4 MHz reference frequency input: signal from Phase-Locked Loop (PLL) tuning system or operating as crystal oscillator
- VIF Automatic Gain Control (AGC) detector for gain control, operating as peak sync detector for negative modulated signals and as a peak white detector for positive modulated signals
- External AGC setting via pin OP1
- Precise fully digital Automatic Frequency Control (AFC) detector with 4-bit digital-to-analog converter, AFC bits readable via I²C-bus
- TakeOver Point (TOP) adjustable via I²C-bus or alternatively with potentiometer
- Fully integrated sound carrier trap for 4.5, 5.5, 6.0, and 6.5 MHz, controlled by FM-PLL oscillator
- Sound IF (SIF) input for single reference Quasi Split Sound (QSS) mode, PLL controlled
- SIF-AGC for gain controlled SIF amplifier, single reference QSS mixer able to operate in high performance single reference QSS mode and in intercarrier mode, switchable via I²C-bus
- AM demodulator without extra reference circuit
- Alignment-free selective FM-PLL demodulator with high linearity and low noise
- I²C-bus control for all functions
- I²C-bus transceiver with pin programmable Module Address (MAD)
- Four I²C-bus addresses via MAD.

FUNCTIONAL DESCRIPTION

1. VIF amplifier
2. Tuner AGC and VIF-AGC
3. VIF-AGC detector
4. Frequency Phase-Locked Loop (FPLL) detector
5. VCO and divider
6. AFC and digital acquisition help
7. Video demodulator and amplifier
8. Sound carrier trap
9. SIF amplifier
10. SIF-AGC detector
11. Single reference QSS mixer
12. AM demodulator
13. FM demodulator and acquisition help
14. Audio amplifier and mute time constant
15. Internal voltage stabilizer
16. I²C-bus transceiver and MAD (module address).

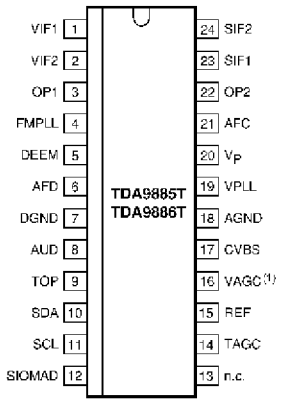
2 GENERAL DESCRIPTION

The TDA9885 is an alignment-free multistandard (PAL and NTSC) vision and sound IF signal PLL demodulator for negative modulation only and FM processing.

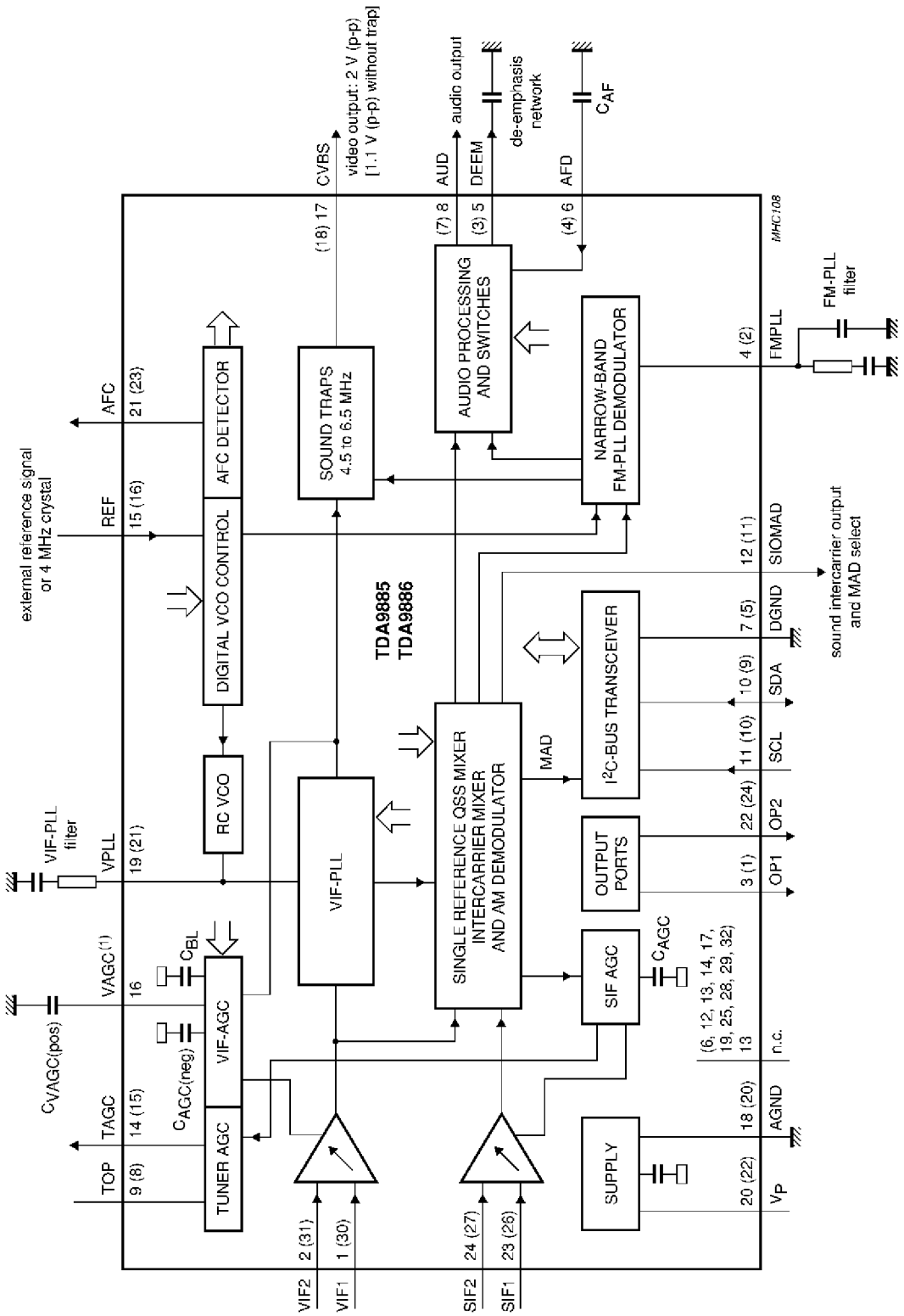
The TDA9886 is an alignment-free multistandard (PAL, SECAM and NTSC) vision and sound IF signal PLL demodulator for positive and negative modulation, including sound AM and FM processing.

3 APPLICATIONS

- TV, VTR, PC and STB applications.



Pin configuration



Block diagram.

SYMBOL	PIN	DESCRIPTION
	TDA9886T TDA9886TS	
VIF1	1	VIF differential input 1
VIF2	2	VIF differential input 2
n.c.	–	not connected
OP1	3	output port 1; open-collector
FMPLL	4	FM-PLL for loop filter
DEEM	5	de-emphasis output for capacitor
AFD	6	AF decoupling input for capacitor
DGND	7	digital ground
n.c.	–	not connected
AUD	8	audio output
TOP	9	tuner AGC TakeOver Point (TOP) for resistor adjustment
SDA	10	I^2C-bus data input and output
SCL	11	I^2C-bus clock input
SIOMAD	12	sound intercarrier output and MAD select with resistor
n.c.	–	not connected
n.c.	13	not connected
n.c.	–	not connected
TAGC	14	tuner AGC output
REF	15	4 MHz crystal or reference signal input
VAGC	16	VIF-AGC for capacitor
n.c.	–	not connected
CVBS	17	composite video output
n.c.	–	not connected
AGND	18	analog ground
VPLL	19	VIF-PLL for loop filter
V_P	20	supply voltage
AFC	21	AFC output
OP2	22	output port 2; open-collector
n.c.	–	not connected
SIF1	23	SIF differential input 1 and MAD select with resistor
SIF2	24	SIF differential input 2 and MAD select with resistor
n.c.	–	not connected
n.c.	–	not connected

1. ELECTRICAL ADJUSTMENTS

1.1 Supply Voltage Adjustment

Connect a digital voltmeter to the cathode of diode D607 at the AV mode of the TV and set the screen voltage to the minimum with the screen potantiometer. Adjust the main supply voltage (B+) with P601 potantiometer to the following value. (After supply adjustment , readjust Screen and focus voltage)

- 28" : 145 VDC (For A66EAK071X44)
- 29" Pure Flat : 130 VDC (For A68QCP891X232)
- 32" 16:9 Pure Flat : 125 VDC (For W76EKW10X71)
- 33" : 145 VDC (For A80AEJ10X522)

2. SERVICE ADJUSTMENTS

2.1 Video Adjustment

- Apply a signal with FUBK or Philips test pattern.
- Enter the service menu with the service remote control or with the user R/C (When main menu appears, enter **" 9301"**)
- Select "VIDEO ADJ. I " and " VIDEO ADJ. II " options.
- Adjust BCL GAIN, BCL TRESHOLD , BCL TRESHOLD 16:9, BCL TIME CONSTANT1, BCL TIME CONSTANT2, OSD BRIGTNESS, OSD CONTRAST, TXT BRIGTNESS, TXT CONTRAST, PAT CONTRAST, PWL, SVM DELAY, DPWL GAIN, DPWL SP to the following values which are given in Table 1.
- Adjust the values of YC DELAY FOR PAL , YC DELAY FOR SECAM, YC DELAY FOR NTSC to " 0" .
- Adjust " SUBCARRIER ADJ." to the level where colour bar is pure.

NOTE 1 : Do not enter any value to EEPROM EDIT, PRESET titles.
- PRESET title is used get back to the factory mode adjustmenst if it is necessary.
- EEPROM EDIT is used to send the data to any adress in the Eeprom or to read the data from the Eeprom.

- Exit from the service menu with the service R/C or with the user R/C (with TV/TXT button on the R/C).

2.2 Screen Adjustment

- Enter the service menu with the service remote control or with the user R/C (When main menu is selected, enter **" 9301"**)
- Select the "VIDEO ADJUSTMENT I " menu.
- Find the SCREEN ADJUSTMENT option with P+/P- button and adjust it to " 0 " with V+/V- button.
- Press " OK" button from the service R/C or the user R/C. At the momet, the screen will be black and a line will be visiable in the middle of the screen.
- Adjust the screen potantiometer to the level where the screen is just black and the line is just visiable)
- By pressing "OK" button , the picture will appear again. (Screen is switched to Off)
- Exit from the service menu with the service R/C or with the user R/C (with TV/TXT button on the R/C).

2.3 SVM (Scan Velocity Modulation) Adjustment

It increases the sharpness on transients from black to white and visa versa. IC internally detects the transients and generates a signal at output pin 41 and after amplifying via transistors, the SVM current is generated and flows through SVM coil and modifies the scan velocity in the region.

2..3.1 The Version with SVM Option in the User Menu

- Remove the cable is connected to connector X804 on position.
- Apply a signal with FUBK or Philips test pattern.
- Select the " PICTURE FEATURES " menu.
- Adjust " SVM " to ON. In this case, measure the waveform in the pin 3 of connector X804 with ossiloscope. The minimum voltage of the waveform has to be 1.5 Vpp in the pin 3 of connector X804.

2.3.2 The Version with SVM Option in the Service Menu

- Remove the cable is connected to connector X804 on position.
- Apply a signal with FUBK or Philips test pattern.
- Enter the service menu with the service R/C or the user R/C.
- Select the " OPTIONS " menu.
- Adjust " SVM " to ON.
- While the cable was removed, measure the waveform in the pin 3 of connector X804 with ossiloscope. The minimum voltage of the waveform has to be 1.5 Vpp in the pin 3 of connector X804.

2.4 AGC Adjustment

- Enter the service menu with the service R/C or the user R/C.
- Select the "IF ADJUSTMENT " title.
- Adjust " AGC " to " 15" and " AGC FOR VHF I " to " 20" .

2.5 Geometry Adjustment

There are two different Geometry adjustment memories for PAL/SECAM and NTSC systems in this chassis.

- " 100 HZ GEOMETRY I " ve " 100 HZ GEOMETRY II " are used for PAL/SECAM systems.
- " 120 HZ GEOMETRY I " ve " 100 HZ GEOMETRY II " are used for NTSC systems.

NOTE 4: Both PAL and NTSC geometry adjustments must be completed for all of the versions.

2.5.1 PAL / SECAM Geometry Adjustment

- Apply a FUBK or Philips Test Pattern to the antenna input.
- Enter the service menu with the service remote control or with the user R/C (When main menu appears, enter **" 9301"**)
- Adjust TILT to " 136 "
- Adjust VERTICAL ZOOM , EHT TRESHOLD , EHT TIME CONSTANT , VERTICAL EHT 1, VERTICAL EHT 2, HORIZONTAL EHT 1 , HORIZONTAL EHT 2, EHT FTC, EHT P1 and EHT P2 to the values which are given **Table 1.**
- Adjust Vertical amplitude with " VERTICAL AMPLITUDE " .
  Adjust Vertical position with " VERTICAL SHIFT " .
  Adjust Vertical linearity with " LINEARITY " .

Adjust Vertical correction with " S_CORRECTION " .
Adjust Vertical parallel with " ANGLE " .
Adjust Vertical curved line with " BOW " .
Adjust Horizontal position with " HORIZONTAL SHIFT " .
Adjust Trapeze with " TRAPEZE CORRECTION" .
Adjust Horizontal general parabola with " CUSHION CORRECTION " .
Adjust Upper corner parabola with " UPPER CORNER 1" and " UPPER CORNER 2 " .
Adjust Lower corner parabola with " LOWER CORNER 1 " and " LOWER CORNER 2 " .
Adjust Horizontal position of OSD with " HOR.OSD POSITION " .
Adjust Vertical position of OSD with " VER.OSD POSITION " .
Adjust Horizontal width with " HORIZONTAL WIDTH " . If the adjustment field is not enough, the value of Horizontal width has to be adjusted to " 255 " . After that, the value of EHT TRESHOLD is decreased and horizontal width adjustment has been completed.

NOTE 2 :
VERTICAL OSD POSITION Adjustment for NTSC mode:
- Do the 120 Hz Geometry adjustments.
- Select the " 120 HZ GEOM. II " menu.
- Adjust " VER. OSD POS." to the value which as half of the header line ("120 HZ GEOM. II ") will be out of the screen.

- **Geometry Adjustment of Picture format 4:3 in the tv sets with 16:9 size :**

  - Apply a FUBK or Philips Test Pattern to the antenna input.
  - Enter the service menu with service the remote control or with the user R/C (When main menu appears, enter **" 9301"**)
  - Select the " 100 HZ GEOMETRY I " menu.
  - Adjust Trapeze with " TRAPEZE II ",
  - Adjust Horizontal Parabola with " CUSHION II "
  - Adjust Upper corner parabola with " UPPER CORNER 1 II " and " UPPER CORNER 2 II " .
  - Adjust Lower corner parabola with " LOWER CORNER 1 II " and " LOWER CORNER 2 II " .

2.5.2 NTSC System Geometry Adjustment

- Apply a NTSC signal to scart 1 (AV1) from a pattern generator with FUBK or Philips test pattern.
- Enter the service menu with service the remote control or with the user R/C (When the main menu appears, enter **" 9301"**)
- Select " 120 HZ GEOMETRY I " and " 120 HZ GEOMETRY II " menus.
- NTSC system Geometry adjustments will be done as PAL/SECAM system Geometry adjustments as mentioned above.
- Exit from the service menu with the service R/C or with the user R/C (with TV/TXT button on the R/C).

2.6 Feature Options

AV3 : NO (SCART 3 is available).
CVBS/ RGB (Scart 3 is available, Component inputs are not available)
CVBS/ RGB/ YUV (Scart 3 and Component inputs are available)

AV4 : NONE (Front AV is not available)
CVBS + SVHS (Front AV and S-VHS are available)
CVBS ONLY (Only CVBS is available, S-VHS is not available)
SVHS ONLY (Only S-VHS is available, Front AV is not available)

TELETEXT : TEXT (Default)
FASTEXT
TOPTEXT
FASTEXT&TOPTEXT

MAIN TUNER : Used to select the Main Tuner.
(Philips; Panasonic DB2G3; Panasonic D##01G3; Temic; Panasonic D44G3; Sharp or Alps)

DEGAUSS : N/A (NOT AVAILABLE) (Degauss is selected from the User menu)
1-30 SECOND (Degauss timer adjustment)

NOTE 3 : Degauss title will be adjusted to " 10 second " for all of the tv sets with 32" size. It will be done N/A for all the versions except 32" size.

BG : EUROPE, NEW ZELAND, AUSTRALIA or NOT AVAILABLE.

DK : Yes (AVAILABLE) or No (NOT AVAILABLE)

I : Yes (AVAILABLE) or No (NOT AVAILABLE)

L/L' : Yes (AVAILABLE) or No (NOT AVAILABLE)

NICAM : Yes (AVAILABLE) or No (NOT AVAILABLE)

DOLBY VIRTUAL : Yes (AVAILABLE) or No (NOT AVAILABLE)

SUBWOOFER : Yes (AVAILABLE) or No (NOT AVAILABLE)

HEADPHONE : Yes (AVAILABLE) or No (NOT AVAILABLE)

CRT : 4:3 (For 4:3 CPT)
16:9 (For 16:9 CPT)

SVM : Scan Velocity Modülation . ON, OFF
VIA MENU (SVM can be selected from the User menu)

NOTE 4 : This function will be selected " ON " for the tv sets with SVM feature, it will be selected " OFF " for the tv sets without SVM feature.

CURTAIN : Yes (AVAILABLE) (Blue back function is ON at the interval programs)
NO (NOT AVAILABLE)(Blue back function is OFF at the interval programs)

NOTE 5 : This function will be selected " YES " for the tv sets with HIGH version and it will be selected " NO " for the tv sets with LOW version.

CARRIER MUTE : VIA MSP (For other countries)
VIA MICRO (For local country)

AM SOUND : MSP (For the tv sets except tv sets with Secam LL')
IF IC (For the tv sets with Secam LL')

STOCK TICK : ENABLE (Shifting Text bar correction is " ON ")
DISABLE (Shifting Text bar correction is " OFF ")

NOTE 6 : This function will be selected " ENABLE " for all the versions.

LTI : ON (Default), OFF
VIA MENU(Luminance Transient Improvement can be selected from the User menu)

CTI : Colour Transient Improvement (ON, OFF)
VIA MENU (Default) (Luminance transient improvement can be selected from the User menu)

PROTECTION : Yes (AVAILABLE) or No (NOT AVAILABLE)

NOTE 7 : This function will be selected "AVAILABLE" at all the versions of tv sets.

PANORAMA : AVAILABLE , NOT AVAILABLE

NOTE 8 : This function is not valid for the tv sets with 4:3 size.

2.7 Factory Settings for Service Mode

1. Values given in Table 1 are typical values and can vary according to the CRT type.

For Philips CRT type (A66EAK071X44 and A66EAK075X44) ;

- Adjust BCL TRESHOLD to " 330 ",
- Adjust PWL to " 130 " ,
- Adjust TEXT BRIGTNESS to " –64 ",
- Adjust TXT CONTRAST to " 300 ",
- Adjust PAT CONTRAST to " 250 "

2. Values given in the below Tables are typical values and can vary according to the CRT type and the frequency. (according to the 100 Hz or 120 Hz) Please see Table 3.

3. PF means Pure Flat and SF means Super Flat.

4. Values given in Table 1,Table 2.1,Table 2.2 and Table 3 can be increased or decreased as 1 by 1, 10 by 10 or 100 by 100 with the service/user Remote Control .

- Vol +/ Vol - keys on the Remote Control are used to increase/decrease 1 by 1,
- 1 and 3 keys on the Remote Control are used to to increase/decrease 10 by 10,
- 4 and 6 keys on the Remote Control are used to to increase/decrease 100 by 100,

values in the below Tables.

	25" 4:3	28" 4:3	28" 16:9 PF	28" 16:9 SF	29" PF	29" SF	32" 16:9 PF	32" 16:9 SF	33"
R.DRIVE	250	234	260	234	224	290	260	250	230
G.DRIVE	225	225	225	225	225	225	225	225	225
B.DRIVE	250	237	225	216	214	260	225	220	220
R.CUTOFF	250	399	320	288	350	350	320	340	350
G.CUTOFF	300	300	300	300	300	300	300	300	300
B.CUTOFF	250	282	255	292	325	325	255	280	325
BCL GAIN	500	500	500	500	500	500	500	500	450
BCL TRESHOLD	220	340	315	315	340	300	315	315	400
BCL TRESHOLD 16:9	220	220	220	220	220	220	220	220	220
SCREEN ADJ.	0	0	0	0	0	0	0	0	0
BCL TIME CONSTANT1	200	200	200	200	200	200	200	200	200
BCL TIME CONCTANT2	0	0	0	0	0	0	0	0	0
OSD BRIGHTNESS	64	64	64	64	64	64	64	64	100
TEXT BRIGTNESS	-50	-40	-30	-50	-30	0	-30	0	0
TXT CONTRAST	300	350	350	350	350	400	350	350	350
PAT CONTRAST	250	270	300	300	300	300	300	300	300
OSD CONTRAST	350	400	350	350	350	350	350	350	350
PWL	150	220	190	150	190	150	180	180	190
SVM DELAY	240	240	240	240	240	240	240	242	240
DPWL GAIN	-20	-20	-20	-20	0	-20	0	-20	-15
DPWL SP	600	600	600	600	600	600	600	600	400
FLYBACK DELAY	-50	-50	-60	-60	-60	-60	-60	-60	-60
VBSO	24		22	24	24	24	24	24	24
TML	11		13	11	11	11	11	11	11

Table 1

	100 HZ GEOMETRY					120 HZ GEOMETRY				
	25" 4:3	28" 4:3	28" 16: 9 PF	28" 16: 9 SF	29" PF	25" 4:3	28" 4:3	28" 16: 9 PF	28" 16: 9 SF	29" PF
VERTICAL AMP.	-290	-298	-262	-428	-285	-290	-296	-278	-418	-276
VERTICAL ZOOM	255	255	200	150	255	255	255	200	150	255
VERTICAL SHIFT	2	2	-2	3	-1	-3	-3	-5	0	-11
LINEARITY	-12	-12	-37	33	0	5	5	-1	86	5
S-CORRECTION	145	145	85	85	180	125	125	175	175	125
ANGLE	10	10	1	2	0	5	5	0	-4	1
BOW	10	10	6	15	3	4	4	-6	23	0
HORIZONTAL WIDTH	260	141	225	228	221	270	153	215	245	259
HORIZONTAL SHIFT	143	143	143	143	159	143	143	143	143	167
TRAPEZE CORREC.	-34	-34	-68	-79	-58	1	1	-45	-22	-16
CUSHION CORREC.	-215	-215	-189	-331	-205	-200	-200	-217	-370	-201
UPPER CORNER 1	44	44	-9	-58	33	72	72	32	72	10
LOWER CORNER 1	74	74	114	134	39	44	44	104	44	30
UPPER CORNER 2	8	8	51	34	4	-45	-45	63	-45	-6
LOWER CORNER 2	-8	-8	-85	-21	33	-13	-13	-13	-13	6
EHT TRESHOLD	120	80	80	80	120	120	200	80	80	120
EHT TIME CONST.	10	5	60	10	10	10	60	60	10	10
VERTICAL EHT 1	-30	-20	-22	-42	-70	-30	-102	-22	-42	-70
VERTICAL EHT 2	-50	-40	-65	-45	-50	-50	15	-65	-45	-50
HORIZONTAL EHT 1	-90	-130	-90	-160	-130	-90	-90	-90	-160	-130
HORIZONTAL EHT 2	-70	-20	-60	-70	-50	-70	-50	-60	-70	-50
HOR.OSD POSITION	32	32	31	32	29	32	32	31	28	28
VER.OSD POSITION	6	6	4	5	4	6	6	4	0	0
EHT FTC	6	2	4	2	2	6	5	4	2	2
EHT P1	0	0	-10	0	0	0	-20	-10	0	0
EHT P2	0	0	0	0	0	0	-20	0	0	0
TRAPEZE II	-34	-34	-68	-79	-58	1	1	-45	-22	-16
CUSHION II	-215	-215	-189	-331	-205	-200	-200	-217	-370	-201
UPPER CORNER1 II	44	44	-9	-58	33	72	72	32	72	10
LOWER CORNER1 II	74	74	114	134	39	44	44	104	44	30
UPPER CORNER2 II	8	8	51	34	4	-45	-45	63	-45	-6
LOWER CORNER2 II	-8	-8	-85	-21	33	-13	-13	-13	-13	6

Table 2.1

	100 HZ GEOMETRY					120 HZ GEOMETRY				
	29" SF	32" 16:9 PF	32" 16: 9 SF	33"		29" SF	32" 16:9 PF	32" 16: 9 SF	33"	
VERTICAL AMP.	-421	-357	-415	-292		-404	-385	-422	-304	
VERTICAL ZOOM	255	200	150	255		255	200	150	255	
VERTICAL SHIFT	-1	1	2	3		-6	-6	-1	0	
LINEARITY	-34	-30	-18	-10		5	-20	-1	-14	
S-CORRECTION	200	150	85	100		125	175	175	109	
ANGLE	1	4	9	6		1	4	1	6	
BOW	0	-5	22	2		-10	-5	-6	0	
HORIZONTAL WIDTH	200	240	146	219		183	195	152	213	
HORIZONTAL SHIFT	143	155	143	143		143	135	143	143	
TRAPEZE CORREC.	-30	-29	-43	-55		6	-10	-10	-16	
CUSHION CORREC.	-151	-170	-388	-242		-146	-160	-380	-261	
UPPER CORNER 1	24	20	-12	12		72	72	72	136	
LOWER CORNER 1	50	45	63	39		44	44	44	63	
UPPER CORNER 2	4	45	-12	20		-45	-45	-45	-60	
LOWER CORNER 2	8	50	-265	22		-13	-13	-13	21	
EHT TRESHOLD	120	80	60	200		120	80	60	200	
EHT TIME CONST.	5	10	10	60		5	10	10	60	
VERTICAL EHT 1	-100	-100	-22	-102		-100	-100	-22	-102	
VERTICAL EHT 2	-20	-40	-35	15		-20	-40	-35	15	
HORIZONTAL EHT 1	-160	-180	-130	-90		-160	-180	-130	-90	
HORIZONTAL EHT 2	-65	-40	-50	-50		-65	-40	-50	-50	
HOR.OSD POSITION	26	28	29	32		25	27	29	28	
VER.OSD POSITION	4	3	4	4		4	0	4	0	
EHT FTC	2	2	2	5		2	2	2	5	
EHT P1	0	0	0	-20		0	0	0	-20	
EHT P2	-10	0	0	-20		-10	0	0	-20	
TRAPEZE II	-30	-29	-43	-55		6	-10	-10	-16	
CUSHION II	-151	-170	-388	-242		-146	-160	-380	-261	
UPPER CORNER1 II	24	20	-12	12		72	72	72	136	
LOWER CORNER1 II	50	45	63	39		44	44	44	63	
UPPER CORNER2 II	4	45	-12	20		-45	-45	-45	-60	
LOWER CORNER2 II	8	50	-265	22		-13	-13	-13	21	

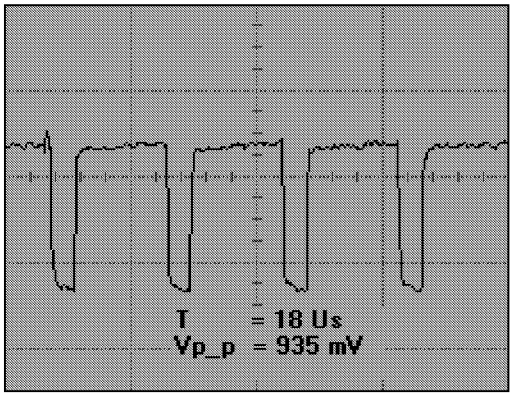
Table 2.2

	28" 16:9 SF (ORION)	28" 16:9 SF (PH0)	29" PF (SB2)	32" 16:9 SF (PH1 , PH5)	32" 16: 9 SF (PH1, PH5)	32" 16:9 PF (VC7)	32" 16:9 PF (TH1, TH2)
BCL TRESHOLD	265	X	X	X	X	415	X
TXT CONTRAST	290	330	X	X	X	X	X
PAT CONTRAST	260	X	X	X	X	X	X
DPWL GAIN	X	0	X	-10	X	X	X
VERTICAL EHT 1	X	-20	X	X	-42	X	-140
VERTICAL EHT 2	X	-30	X	X	-85	X	-10
HORIZONTAL EHT 1	X	-130	X	X	-200	-200	-200
HORIZONTAL EHT 2	X	-50	X	X	-70	-70	-60
EHT P1	X	X	X	X	X	X	10
EHT P2	X	X	X	X	-10	-10	10
OSD BRIGHTNESS	X	X	X	X	X	X	60
TEXT BRIGHTNESS	X	X	-50	X	X	X	0
PWL	X	X	X	X	X	X	190
EHT TRESHOLD	X	X	150	X	X	X	X

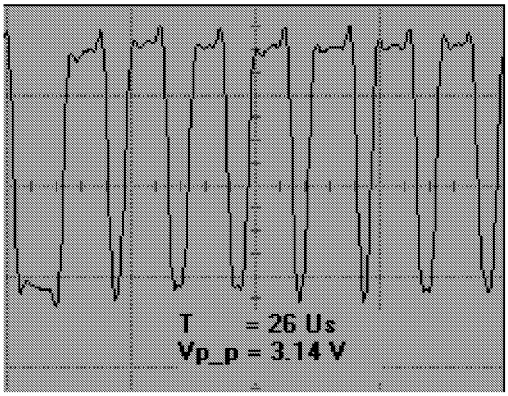
Table 3

NOTE 9: Some of values given in Table 1, Table 2.1 and Table 2.2 can vary according to the CRT type. They are given in Table 3 above.

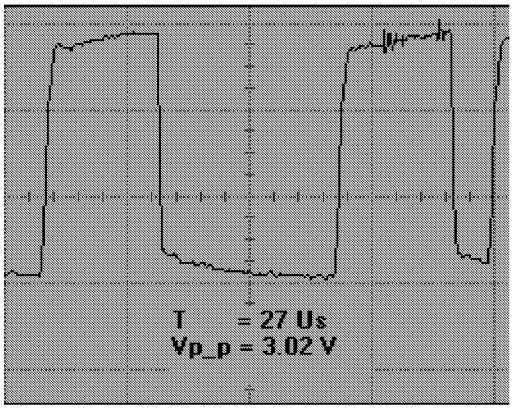
WAVE FORMS



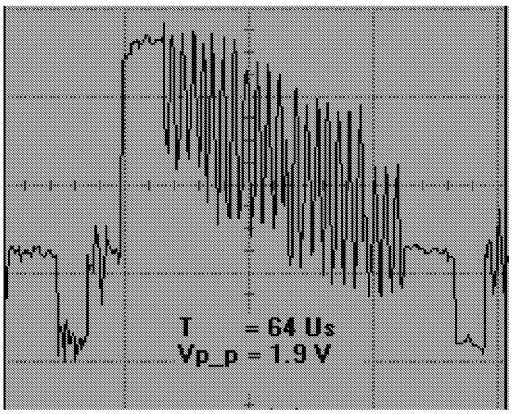
H_DRIVE
X205 PIN (2)- Std.by



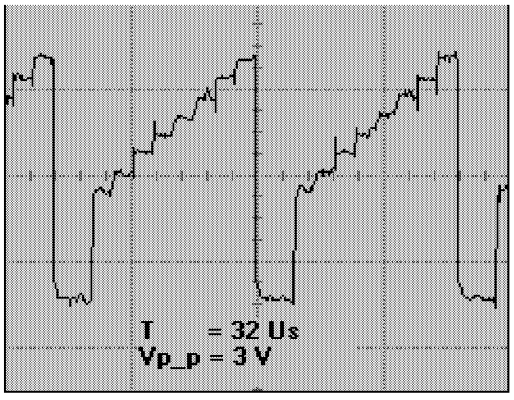
SCL 3_3
X204 PIN (17)



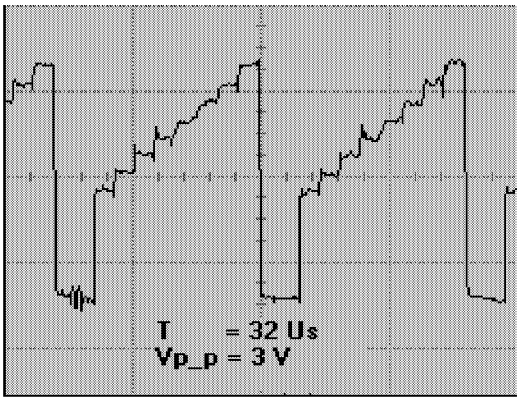
SDA 3_3
X204 PIN 18)



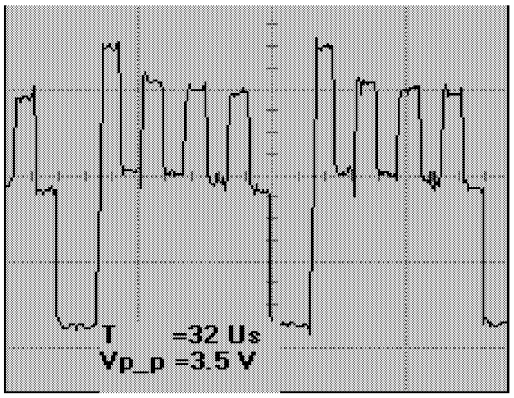
SC1 VID_OUT
X203 PIN (7)



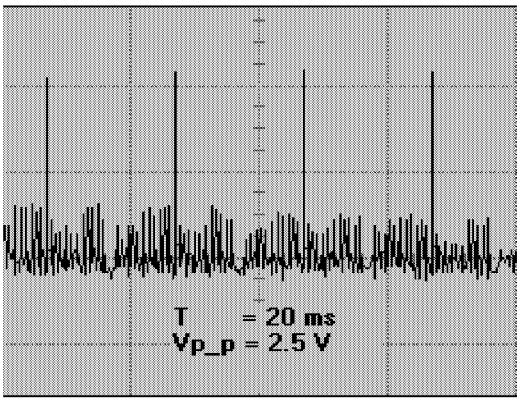
RED
X701 PIN (2)



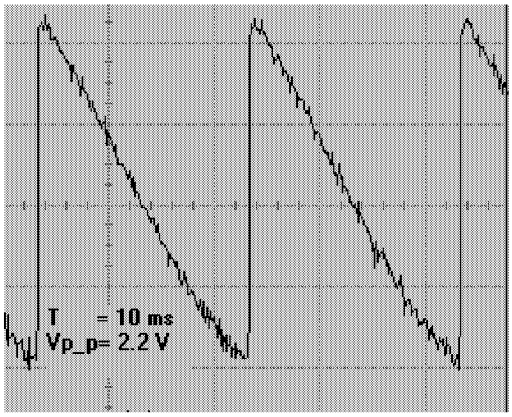
GREEN
X701 PIN (4)



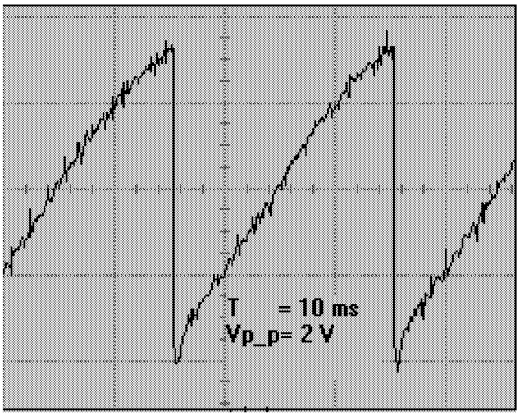
BLUE
X701 PIN (6)



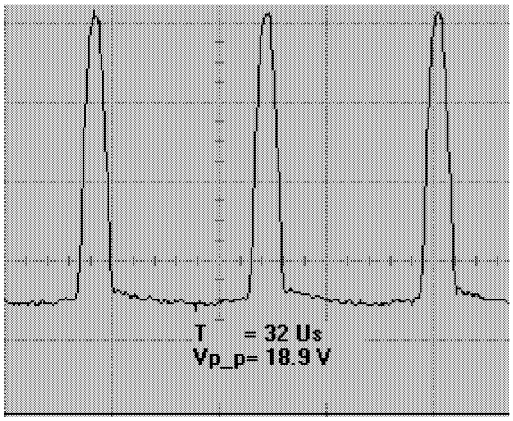
CUT OFF
X701 PIN (10)



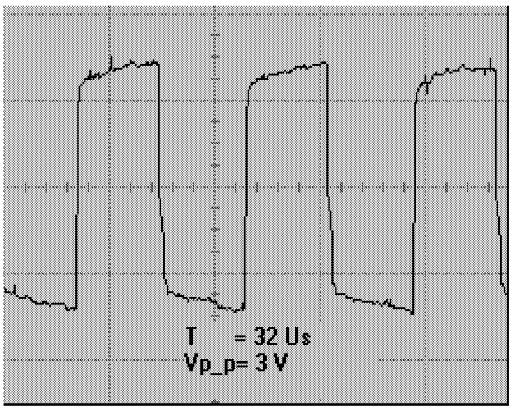
V_DRIVE (-)
X205 PIN (5)



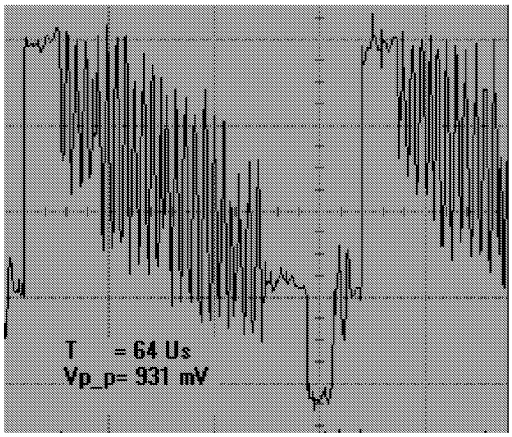
V_DRIVE (+)
X205 PIN (4)



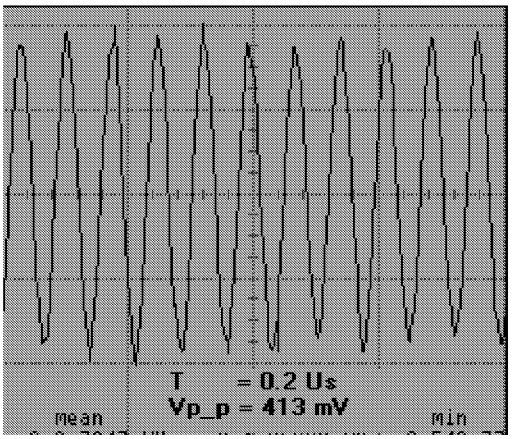
FLY_BACK
X205 PIN (2)



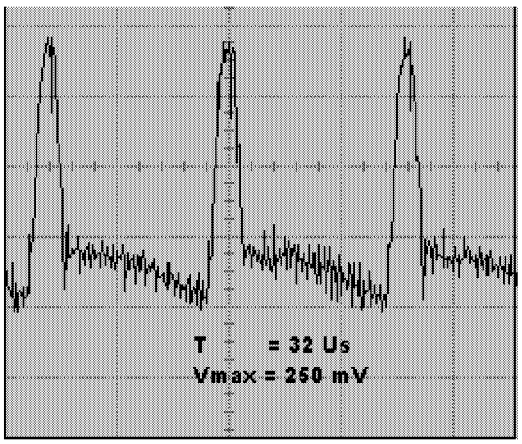
H_DRIVE
X205 PIN (3)



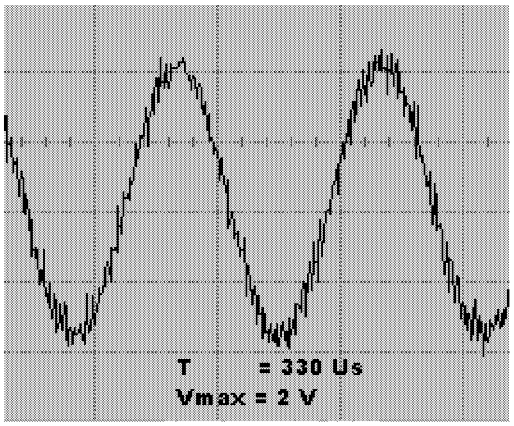
CVBS_TUN1
X203 PIN (1)



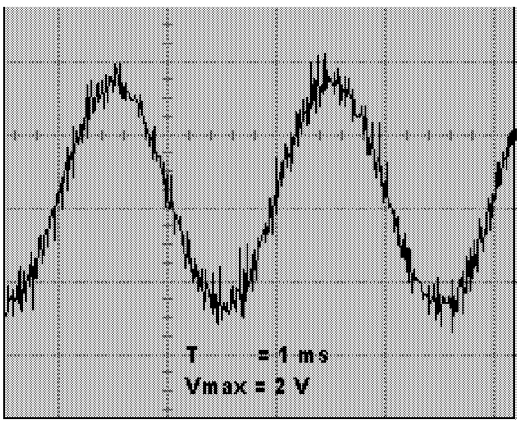
QSS_TUN1
IC101 PIN (12)



HEATER
X504 PIN (2)



L OUT
IC 301 PIN (29)



R OUT
IC 301 PIN(28)

PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
010712-03	POWER SWITCH S40 4/100A-250V S.BRAC		
010840-01	TACT SW LONG STEN 2LEG		
251487	C-ELA 47UF M 6.3V 11*5 R:5		C01
291101	CC-CHIP 100PF J 50V /1206 NPO		C02 C03
290475	CC-CHIP 47PF J 50V /0603 NPO TAPE		C101 C102 C103 C104 C254 C255
252111	EC 100UF 10V 11*5 R:5		C106 C453
294118	CC-CHIP 100NF K 16V /0603 X7R		C107 C221 C404 C802A C806 C816A
292114	CC-CHIP 1NF K 50V /0603 X7R		C108 C115 C309 C403 C501 C503
293113	CC-CHIP 10NF K 50V /0603 X7R		C109 C111 C252 C414 C535 C814
291393	CC-CHIP 390PF J 50V /0603 NPO TAPE		C112
250475	EC 4.7UF 63V 11*5 R:5		C114 C222 C224 C231 C232 C514
290223	CC-CHIP 22PF J 50V /0603 NPO TAPE		C118 C812 C830 C817A C818A C819A
294476	CC-CHIP 470NF K 16V /0805 X7R		C119 C218
290107	CC-CHIP 10PF J 50V /0603 NPO TAPE		C120 C423
292153	CC-CHIP 1.5NF K 50V /0603 X7R TAPE		C121
294235	CC-CHIP 220NF Z 16V /0603 Y5V TAPE		C122 C330 C333
293478	CC-CHIP 47NF K 25V /0603 X7R TAPE		C124 C216 C326 C401 C538 C813A
251478	EC 47UF 16V 11*5 R:5		C201 C206 C236 C413 C434 C647
291476	CC-CHIP 470PF J 50V /0603 NP0		C209 C213 C229 C303 C445 C502
291226	CC-CHIP 220PF J 50V /0603 NPO TAPE		C210 C211 C212 C308 C432 C641
251116	EC 10UF 63V 11*5 R:5		C214 C215 C249 C526 C259 C627
252112	EC 100UF 16V 11*6 R:5		C217 C307 C312 C319 C322 C325
250332	EC 3.3UF 50V 11*5 R:5		C220
299153	CC-CHIP 1.5PF J 50V /0603 NPO TAPE		C260 C261
253150	EC 1500UF 25V 20*13 R:5		C327 C631
294111	CC-CHIP 100NF K 25V /0805 X7R		C328
292228	CC-CHIP 2.2NF K 50V/0603 X7R		C329 C332
250105	EC 1UF 100V 11*5 R:5		C334 C523 C524
251115	EC 10UF 25V 11*5 R:5		C425 C837 C874
290335	CC-CHIP 33PF J 50V /0603 NPO TAPE		C426 C427
291104	CC-CHIP 100PF J 50V /0603 NPO		C428 C439 C441 C444 C525 C863
290562	CC-CHIP 56PF J 50V/0603 NPO TAPE		C429 C620 C854 C856 C820A C821A
252225	EC 220UF 25V 11*8 R:5		C504 C507
274102	C-PEM 100NF J 63V R:5		C505 C508 C513 C529
274107	C-PEM 100NF J 100V R:5		C506
274230	C-PEM 220NF J 100V R:5		C509 C826A
221571	CC 560PF 500V TAPE R:5		C510 C511 C709 C714 C719
252476	EC 470UF 25V 11*10 R:5		C512 C533 C537
271331	C-PPM 330PF J 1500V/1600V R:15	29"	C516
272103	C-PPM 1NF J 2KV R:15	32"	C516
272154	C-PPM 1.5NF J 1600V R:15	28"	C516
273114	C-PPM 10NF J 1.5/1.6KV R:15 CLASS-B	28"	C517
273123	C-PPM 12NF J 1.5/1.6KV R:15 CLASS-B	29"	C517
273131	C-PPM 13NF J 1.5/1.6KV R:22.5 CLASS-B	32"	C517
274477	C-PPM 470NF J 250V R:15 CLASS-B	29"	C518
274563	C-PPM 560NF J 250V R:15 CLAAS-B	28"	C518
274684	C-PPM 680NF J 250V R:15 CLASS-B	32"	C518
259478	EC 4.7UF 250V 12*10 R:5		C519 C703 C722 C730
274330	C-PEM 330NF J 250V R:15		C520
274630	C-PPM 630NF J 250V R:15 CLASS-B		C521
274684	C-PPM 680NF J 250V R:15 CLASS-B		C521
273270	C-PPM 27NF J 400V R:15		C522
293681	CC-CHIP 68NF K 25V /0805 X7R		C527
273475	C-PEM 47NF K 100V R:5		C528
201220	CC 220PF K 500V R:5		C530 C531 C536 C539 C632 C657
251230	EC 22UF 250V 20*13 R:5		C532
252106	EC 100UF 63V 11*5.8 R:5		C534
272110	C-PEM 1NF J 100V R:5		C540

PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
274238	C-PEM 220NF K 275V-AC R:15 CLASS-B		C601
274342	C-PPM 330NF K 275V-AC R:22.5 CLASS-B		C602
274108	C-PPM 100NF J 400V R:10		C603
202220	CC 2.2NF M 250VAC Y5U R:10 AH/NSA		C606 C607 C623
202105	CC 1NF K 1KV Y5P R:5		C608 C609 C610 C611
203330	C-PPM 33NF J 630V R:15		C612
252222	EC 220UF M 400V 40*25 R:10		C613
201481	CC 470PF K 2KV +15%, -30% 105C R:5		C614
231340	EC 33UF 35V 11*5 R:5		C615
292475	CC-CHIP 4.7NF K 50V /0603 X7R		C617 C618
271820	C-PEM 820PF J 100V R:5		C619
292336	CC-CHIP 3.3NF K 50V /0603 X7R TAPE		C621
201226	CC 220PF K 2KV Y5P R:5		C624
252104	EC 100UF 200V 25*16 R:7.5		C625
251485	EC 47UF 250V 25*13 R:5		C626
253106	EC 1000UF 25V 20*13 R:5		C630 C633
251475	EC 47UF 63V 11*6.3 R:5		C639 C661
250113	C-ELA 1UF 25V 11*5 R:5		C662
292115	CC-CHIP 1NF J 50V /0603		C663
252482	EC 470UF 16V 12.5*10 R:5		C701
252229	EC 220UF 16V 11*8 R:5		C702 C812A
274474	C-PEM 470NF J 63V R:5		C704
209220	CC 2PF C 50V NPO R:5		C706 C711 C716
273222	C-PEM 22NF K 250V R:7.5		C707 C712 C717
273229	C-PEM 22NF K 100V R:5		C708 C710 C713 C715 C718 C720
202221	C-CE 2.2NF K 2KV Y5P R:7.5		C721 C723
273225	C-PEM 22NF J 63V R:5		C740
272101	C-PEM 1NF K 50V R:5		C781 C782 C784 C785
293234	CC-CHIP 22NF K 50V/0603 X7R TAPE		C800 C820 C880 C881 C884 C885
290275	CC-CHIP 27PF J 50V 0603 NPO TAPE		C801 C802
293155	CC-CHIP 15NF K 50V /0603 X7R		C816 C817
293231	CC-CHIP 22NF K 25V /0603 X7R		C818
291560	CC-CHIP 560PF J 50V /0805 NPO		C839 C840 C842
252105	EC 100UF 50V 12*8 R:5		C860
294231	CC-CHIP 220NF K 16V /0805 X7R		C873
252238	EC 100UF-M 35V 12*8 R:5		C896
251105	EC 10UF 16V 5*3.5 R:5		C901
292110	CC-CHIP 1NF K 50V /0805 X7R		C920 C921 C922 C923
273471	C-PEM 47NF K 63V R:5		C940 C941
303991	LED IR SIR563SB3F 23/940		D01
303993	LED LTL4221N D:3 R/D RED		D02
303223	DIODE-CHIP BA682 SOD80		D101
302289	DIODE 1N4148 52MM		D201 D301 D502 D606 D614 D701
303195	DIODE 4148 MELF		D401 D402 D801 D802 D803 D804
303813	DIODE RGP15D		D501 D611
303215	DIODE RGP10G		D503
302316	DIODE FFPF60B150DS		D505
303216	DIODE RGP15G		D508 D510
303308	DIODE RF2007		D601 D602 D603 D604
303214	DIODE UF4006		D605 D705
302317	DIODE BYT56M		D607
302319	DIODE BYW29F-150		D608 D609
302947	DIODE 1N4004		D617
056708	SAW FILTER OFW K3958M		F101
056010	SAW FILTER OFW K9656M		F102
054280	FUSE 3.15AT (215)		FS601
054300	FUSE T6.3A		FS602

PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
452382	IC-CHIP S3C1840DA9/SMB1 T&R		IC01
451569	IC-CHIP TDA9886T/V3 118(SO24) T&R		IC101
452510	IC 4053B CMOS 16SOIC		IC201
452575-02	IC MSP3400G PP B8 V3	A2-STEREO	IC301
452595-01	IC MSP3411G B8 V3	V.DOLBY- NICAM	IC301
452800-01	IC MSP3410G B8 V3 DIP64 AUDIO	NICAM-BG (+A2 ST)	IC301
452298	IC TDA2822M		IC302
453082	IC TDA7297		IC303
452807	IC SDA555XFL		IC401
S-SBD128	SW/IC SDA555FL 22.2 V5		IC401
452662-02	IC-CHIP AT24C16AN 10SI2.7 TAPE&REEL		IC402
453073	IC-CHIP KF25BDT(T&R)		IC403
452485	IC KA75270 (SAMSUNG)		IC406
452437	IC STV9379FA		IC501
452795	IC TDA16846		IC601
451885-01	IC TL431CLP (ON SEMICONDUCTOR)		IC602
451518	IC KA317TU T0220CASE		IC603 IC606
453100	IC LD1086V TO220CASE		IC604 IC607
451849	IC TDB7808		IC605
452300	IC TDA6111Q/N4		IC701 IC702 IC703
453163	IC-CHIP VSP9405B-B11(T&R)	29"	IC801
453163	IC-CHIP VSP9405B-B11(T&R)	32"	IC801
453164	IC-CHIP VSP9402A-B13(T&R)	28"	IC801
453072	IC-CHIP FAN1117AD18X(T&R)		IC802
453094	IC-CHIP DDP3315C-D2(T&R)		IC803
453094-01	IC-CHIP DDP3315C-QA-G3 (T&R)		IC803
452521	IR RECEIVER TSOP 1838		IC901
053500	COIL 10UH K AXIAL LAL04		L101 L103 L201 L301 L302
053781	COIL 2.2UH LAL04		L401 L405 L701 L801 L811 L812
053732	COIL 4.7UH LAL04 52MM		L402 L403
056296	FILTER EMI 470PF		L406 L407 L410
053739-10	COIL CHOKE 50UH		L501 L604
051706-01	BRIDGECOIL 1MH 20.1		L502
051707-10	COIL 6MH E/W		L503
051736-01	COIL 4.2UH LINEARITE V2		L504
051810	BOBIN LINEARITE 8.3UH		L504
051831	BOBIN LINEARITE 6.1UH		L504
051735-02	COIL 150UH CHOKE		L505
051599-10	LINE FILTER 27MH TOROID		L601
051811	COIL PFC 40MH DTH30403H57 ELIM TECH		L603
053711	COIL 10UH K (TAIYO) LAL03		L605
053743	BOBIN-CHIP 2.2UH K/0805		L803 L804 L810
053743	COIL-CHIP 2.2UH K/0805		L807 L808 L809
133118	R-VAR 10K V(2.5MM) 5*3		P601
452297-01	IC SFH617 OPTO COUPLER		PH601
056210	CER.RESONATOR GSB455E		Q01
056013	CRYSTAL 4 MHZ HC49-U		Q101
056952	CRYSTAL 18.432MHZ +-30PPM		Q201
056620	CRYSTAL 6MHZ (CL 30PF)HC49-U		Q401
056038	CRYSTAL 20.25MHZ 20PPM (106478)		Q801
056162	CRYSTAL 5MHZ HC49-U		Q802
171107	RC-CHIP 100R J 1/16W /0603		R101 R201 R227 R410 R804 R315
103122	CFR 12K J 1/4W		R105 R613
102101	CFR 1K J 1/4W /6 52MM		R106 R108
173114	RC-CHIP 100K J 1/16W /0603		R107 R642
172567	RC-CHIP 5.6K J 1/16W /0603 TAPE		R109 R317

PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS					
172224	RC-CHIP 2.2K J 1/16W/0603 TAPE		R110	R459	R518	R520	R628	R813
172104	RC-CHIP 1K J 1/16W /0603		R111	R207	R305	R404	R528	R811
173478	RC-CHIP 47K J 1/16W /0603 TAPE		R113	R114	R219	R220		
101223	CFR 220R J 1/4W 52MM		R115	R116	R903			
172479	RC-CHIP 4.7K J 1/16W /0603 TAPE		R117	R122	R266	R440	R606	R521
172154	RC-CHIP 1.5K J 1/16W /0603 TAPE		R118	R119				
171336	RC-CHIP 330R J 1/16W /0603 TAPE		R121	R202	R204	R234	R415	R878
170474	CFR-CHIP 47R J 1/16W /0603 TAPE		R205	R206	R228	R441	R443	R806
170750	RC-CHIP 75R J 1/10W /0805		R209	R211	R212	R213	R216	R225
170683	RC-CHIP 68R J 1/10W /0805		R210	R226	R242			
173108	RC-CHIP 10K J 1/16W /0603		R214	R232	R309	R526	R630	R658
179005	RC-CHIP 0R /0603 1.6*0.8 TAPE		R217	R218	R812A	R814A	R617	R662
170474	RC-CHIP 47R J 1/16W /0603 SERITLI		R241					
171224	RC-CHIP 220R J 1/16W/0603 TAPE		R251	R308	R447	R519	R650	R814
171472	RC-CHIP 470R J 1/16W /0603 TAPE		R302	R303	R407	R412	R458	R807
173277	RC-CHIP 27K J 1/16W /0603 TAPE		R304	R306	R336	R623	R610	
129471	RF 4.7R J 0.25W 52MM		R310					
170047	RC-CHIP 4.7R J 1/10W /0805		R311	R312				
102563	CFR 5.6K J 1/4W /6 52MM		R314					
102157	CFR 1.5K J 1/4W /6 52MM		R318	R721	R726	R732		
172686	RC-CHIP 6.8K J 1/16W /0603		R319	R522	R525	R633	R810A	R811A
173332	RC-CHIP 33K J 1/16W /0603 TAPE		R336	R623	R610			
175106	RC-CHIP 1M J 1/10W/0603		R401					
172336	RC-CHIP 3.3K J 1/16W /0603		R402	R403	R424	R430	R462	R817
171395	RC-CHIP 390R J 1/16W /0603 TAPE		R409					
171562	RC-CHIP 560R J 1/16W/0603 TAPE		R413	R638	R877	R880		
173153	RC-CHIP 15K J 1/16W /0603 TAPE		R448					
113271	RM 27K %1 1/4W		R501	R502	R503	R504		
109150	CFR 1.5R J 1/2W /9		R505					
111395	RMO 390R J 1W		R506					
119221	RM 2.2R J 1W		R507	R508				
120472	RW 47R J 7W SQM-7 CEMENT H:39 R:5		R509					
100473	CFR 47R J 1/4W /6 52MM		R510	R735				
119563	RMO 0.56R J 2W 52MM		R512					
111100	RMO 100R J 2W		R513					
113113	RMF 10K J 1/2W		R514					
122114	RWF 1K J 1.5W 73MM		R515					
112683	RMO 6.8R J 1W		R516					
119227-01	RMF 2.2R J 1W	29" - 32"	R516	R536				
114110	RM 100K %1 1/4W 26MM		R517					
103116	CFR 10K J 1/4W /6 52MM		R527	R624	R631	R649	R652	R656
129395	RMF 3.9R J 0.5W 52MM		R529					
129229	RWF 0.22R J 0.75W		R530	R531	R533			
112335	RMO 3.3K J 1W		R532					
102141	CFR 1K J 1/4W /6 26MM		R535	R701				
119690	RMF 6.8R J 1W	28"	R536					
119227-01	RMF 2.2R J 1W	28"	R537	R709				
121220	RMF 220R J .75W		R539					
115110	RM 1M J .5W 52MM SAFETY		R602					
154231	PTC 27R DVAL 3PIN CASE	28"	R603					
154216	NTC 5.1R M (S234R)		R604					
113470	RMO 47K J 5W SQZ-5 CEMENT L:27 R:15		R605					
100154	CFR 15R J 1/2W 52MM		R607					
115392	RMO 3.9M %1 0.5W		R608					
171824	RC-CHIP 820R J 1/16W /0603 TAPE		R609					
115104	RMO 1M %1 0.5W		R611					
173394	RC-CHIP 39K J 1/16W /0603 TAPE		R614					
115470	RM 4.7M J 1/2W 52MM 'SAFETY '		R616					
119564	RMO 0.56R J 3W		R622					
114121	RM 120K %1 1/2W 52MM		R625					

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PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
113300	RM 30K %1 1/4W 52MM	28" - 29"	R626
113336	RM 33K %1 1/4W 26MM	32"	R626
103471	CFR 47K J 1W		R627
119113	RMF 0.1R J 1/4W (FM 1/4)		R634 R635
119235	RMO 0.22R J 3W		R636
114115	RM 115K %1 1/4W	29" - 32"	R639
114152	RM 150K F 1/4W 52MM		R639
112272	RM 2.7K %1 1/4W 26MM		R643
171392	RC-CHIP 390R %1 1/16W/0603 TAPE		R644 R646
171241	RC-CHIP 240R %1 1/16W /0603 TAPE		R645 R647
172113	RC-CHIP 1.05K %1 1/16W /0603 TAPE		R651
171363	RC-CHIP 365R %1 1/16W /0603 TAPE		R655
102487	CFR 4.7K J 1/4W /6 26MM		R660
154222	PTC 18R/2 PIN DISC TYPE	32"	R663 R664
154225	PTC 18R/3 PIN BOX TYPE	29"	R663 R664
102685	CFR 6.8K J 1/4W /6 52MM		R703 R708
102198	CFR 1.3K J 1/4W /6 26MM		R704
103155	CFR 15K J 1/4W 52MM		R705
103686	CFR 68K J 1/4W /6 26MM		R706
101274	CFR 270R J 1/4W /6 52MM		R707
119110	RMF 1R J 1W	32"	R709
119122	RMF 1.2R J 1W	29"	R709
103136	CFR 10K J 1/4W /6 26MM		R710
102228	CFR 2.2K J 1/4W /6 26MM		R711
105110	CFR 1M J 1/4W /6 26MM		R718
102186	CFR 1.8K J 1/4W /6 52MM		R720 R725 R731
103684	CFR 68K J 1/2W /9		R722 R727 R733
111101	RMO 1K J 1W		R723 R729 R734
179103	RC-CHIP 1R J 0805 1/10W		R803
179475	RC-CHIP 4.7R J 1/16W/0603		R804A
173229	RC-CHIP 22K J 1/16W /0603		R806A
172824	RC-CHIP 8.2K J 1/16W /0603 TAPE		R809 R810
183100	RM-CHIP 10K %1 1/16W /0603		R856
170754	RC-CHIP 75R J 1/16W /0603		R858 R891 R892 R893
170223	RC-CHIP 22R J 1/10W /0805		R867
170107	RC-CHIP 27R J 1/16W /0603 SERITLI	32"	R868 R871 R874
170333	RC-CHIP 33R J 1/16W /0603 TAPE	28" - 29"	R868 R871 R874
170154	RC-CHIP 150R J 1/16W /0603 TAPE		R869 R872 R875
171227	RC-CHIP 270R J 1/16W/0603 TAPE		R870 R873 R876
170106	RC-CHIP 10R J 1/16W /0603		R896 R897 R898
101163	CFR 150R J 1/4W 26MM		R901 R902
141182	RC 180R J 1/4W /3.2 26MM		R905 R906 R907
100751	CFR 75R J 1/4W /6 26MM		R920 R921
101494	CFR 470R J 1/4W /6 26MM		R922 R923
101184	CFR 180R J 1/2W (A) 52MM		R940 R941
101396	CFR 390R J 1/4W /6 26MM		R942 R943
054301	ROLE RT424-012		RL601
031251	SCART SOCKET 14.1		SK201 SK202
031197	SCART SOKET HR-DM2441S-O		SK202
401047	TRN BC337-25		T01
401142	TRN-CHIP BC858B SOT23		T02 T101 T401 T502 T503 T806
401141	TRN-CHIP BC848B SOT23		T102 T204 T205 T301 T403 T506
401331	TRN-CHIP 2SK3065		T501
401235	TRN 2SC5331		T504
401231	TRN BDX53C		T505
400131	TRN FQP12N60		T601
400339	TRN BF423		T602

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PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
400831	TRN BC548C		T701 T702
400989	TRN BC558B		T703
401470	TRN-CHIP BC858B SOT23 ON SEMICOND.		T803 T804 T805
058231-TR1	FBT 22.1 32"16:9 TR/003321164	29" - 32"	TR501
058533-TR4	FBT 20.2 TERMAL	28"	TR501
051789	DRIVER TRANSFORMER 20.2		TR502
050021-TR1	SMPS 29PF TR/2496002090218 22.1	29"	TR601
059931-EL1	SMPS 29PF EL/2094.0083 22.1	29"	TR601
059530-EL1	SMPS 28"16:9 PF EL/ 22.1	32"	TR601
059535-EL1	SMPS 28" EL/2094.0082 22.1	28"	TR601
059535-TR1	SMPS 28" 22.1	28"	TR601
051604	TRAFO FOCUS 101 811 00 VOGT	DOUBLE FOCUS	TR950
7RZ136-PH4	TUNER PH ASIMETRIK UV1316/ALG-3 SV22		TU101
031866	CONN.HOUSING X2006 GREY		X202
031313	CONN.30P 3MM MOLEX-52872-3011		X203
031312	CONN.20P 3MM MOLEX-52872-2011		X204
031854	CONN.HOUSING X2003 GREY		X301 X940
031858	CONN.HOUSING X2004 GREY		X302
031872	CONN.HOUSING X2007 BLACK		X405
031675	CON.HOUSING 2P MALE		X501 X601
031794	CONN.MALE HOR. 4.PIN PLUG		X503
031672	CON.HOUSING 2P MALE RED		X602
031299	CONN.HOUS.10P 2317-10S JST4B-XH-A		X701 X803
031823	CON.HOUSING X2.5TMK 2204 BLACK		X702
031320	CONN.20P 3MM MOLEX 53.615-2011		X801
031330	CONN.30P 3MM MOLEX 53.615-3011		X805
031870	CONN.HOUSING X2007 GREY		X807
7PZ508-AS	CABLE HARNESS 6B. L=500 S-VHS MOD.		X920
031162	CONN. CINCH RCA PJ803-4 YELLOW VER		X921
031161	CONN. CINCH RCA PJ803-3 RED VER.14.1		X922
031160	CONN. CINCH RCA PJ803-2 WHITE VER.14.1		X923
031788	CONN.S-VHS DIN-406D VER.14.1		X924
031530-02	INCHANG/CRT SOCKET ISHM23S-W		X703
031541	CRT SOKET 29" DOUBLE FOCUS		X703
303765	DIOED-CHIP BZT55C5V6-GS08 VISHAY		ZD401 ZD402 ZD403 ZD407 ZD408 ZD410
302298	DIODE Z. ZPD5.1V 26MM		ZD501
300193	DIODE Z. BZX55C9V1-GPS(VISHAY)		ZD502 ZD701
302318	DIODE Z. BZX55C33 52MM		ZD503
303814	DIODE Z.MTZJ39B		ZD504 ZD505
303771	DIODE Z. UZT33V		ZD601
056328-PH3	CPT PH A66EAF071X44 100HZ	28"	
056329-SB7	CPT SEB A68QCP993X509 PF 100HZ TFOC	29"	
056432-VC4	CPT VC W76EGV023X522 100HZ (S.FLAT)	32"	
528167-AS	DEGAUSSING COIL ASSY 28" BAND	28"	
629169-AS	DEGAUS COIL ASSY 29" BAND	29"	
532167-AS	DEGAUS COIL ASSY 32" P.FLAT PH4	32" 16:9	
LE3110	BD CHASIS-SD 28 P/SX/LOW/2SC/KLSV	28"	
X29110	BD SASI-SD 29PF PS/VDB/NX/3S/KL/SV/	29"	
MM2110	BD SASI-SD 32SF P/SX/HIGH/3SC/KLK/SVH/	32"	

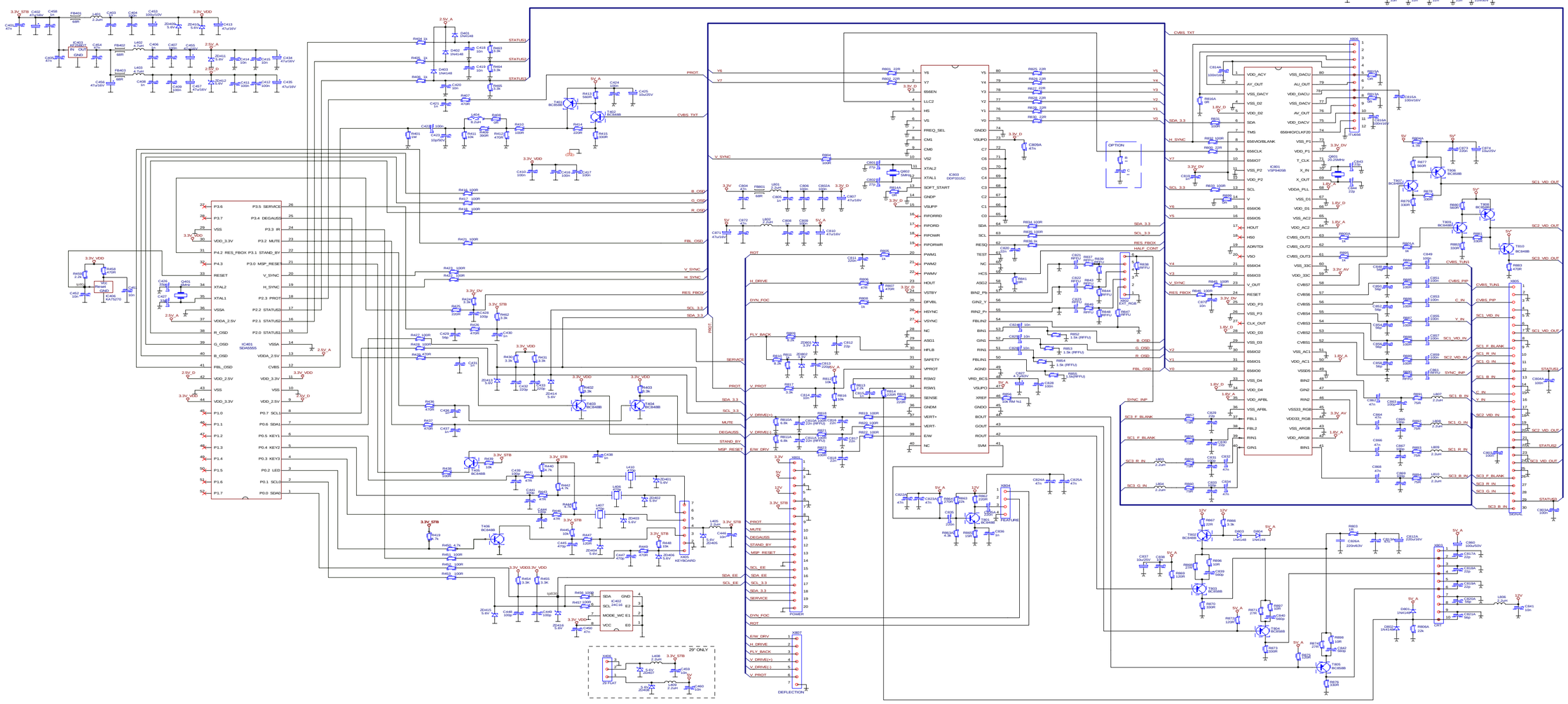
PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
ZA1165	BZ CRT BOARD	28"	
GE1165	BZ SASI CRT MODULU 22.1 (1R) 32SF	32"	
JL3165	BZ SASI CRT MODULU 22.1 (1.2R) 29PF	29"	
6UZ107-AS	SPEAKER 8R 10W(N)/15W(M) 65X153		
7UB107-AS	HOP.8R 10W(N)/15W(M) 102X102		
7UB108-AS	TWEETER HOP.10R 5W(N)/10W(M) 53X28		
7SZ185	H.PHONE MOD. 14.1		
LE3160	BD-MN FEAT.BOX 22.2 28 2SC 4:3	28"	
MM2160	HIGH	32"	
X29160	BD-MN FEAT.BOX 22.2 29PF 3SC 4:3 HIGH	29"	
7RZ130	S-VHS MODULE ASSY 14.1 28" T05	28"	
ZK2130	S-VHS MODULE ASSY	29"	
ZK2130	S-VHS MODULU ASSY	32"	
S99172	CU ASSY 28"T05 14.2		
7MY100-AS	MAIN SW ASSY 21TD1/TW1 FIL.14.1		
885906	BATTERY AAA 1.5V		
LE3801	INS.MAN.GERMAN 22.2		
ZK1820	CIRCUIT DIAGRAM 22.2		

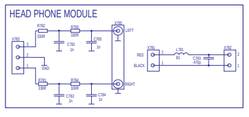
Please note that Product Parts List Files should be investigated for the mechanical parts like cabinets, etc.

22.2 100Hz CTV CHASSIS 110

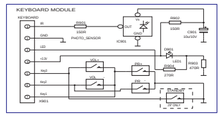
FEATUREBOX MODUL



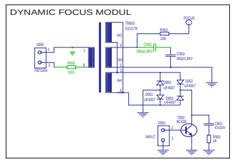
HEAD PHONE MODULE



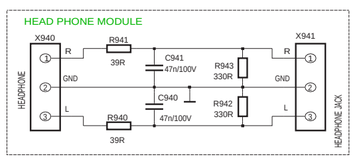
KEYBOARD MODULE



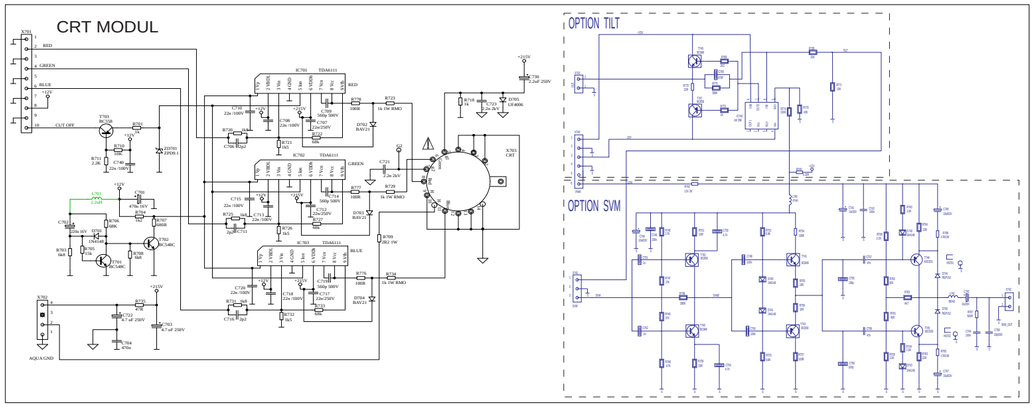
DYNAMIC FOCUS MODUL



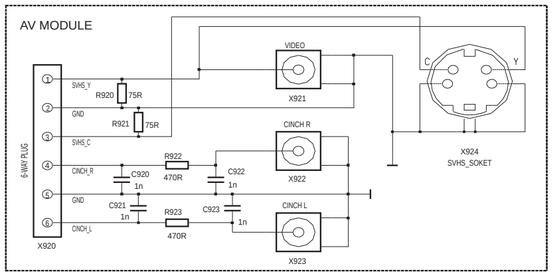
HEAD PHONE MODULE



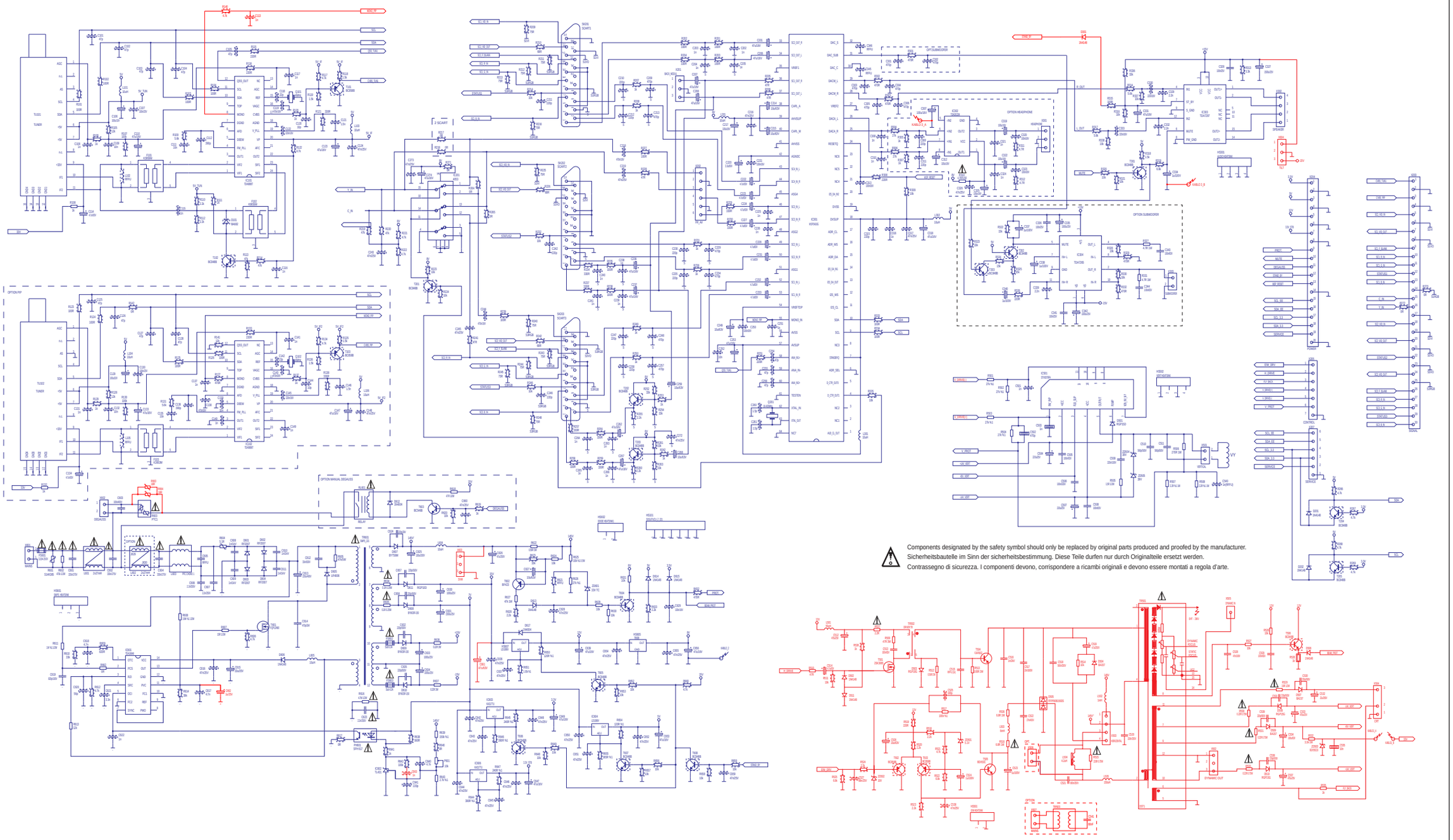
CRT MODUL



AV MODULE



22.2 100Hz CTV CHASSIS 110°



Components designated by the safety symbol should only be replaced by original parts produced and proofed by the manufacturer.
Sicherheitsbautelle im Sinn der sicherheitsbestimmung. Diese Teile durfen nur durch Originalteile ersetzt werden.
Contrassegno di sicurezza. I componenti devono, corrispondere a ricambi originali e devono essere montati a regola d'arte.